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COMPUTERWORLD

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HP ready to license Precision Architecture RISC technology; Hitachi predicted to be the first to sign up. Page 101.

Compaq to pay IBM patent bill

Insists MCA aspect of cross-licensing deal not a concession to IBM bus

BY PATRICIA KEEFE
and MICHAEL ALEXANDER
CW STAFF

Compaq Computer Corp. reached an agreement with IBM last week, settling all past liabilities related to IBM personal computer technology and at the same time buying access to Micro Channel Architecture and other advanced computer technologies.

The two companies announced a broad-reaching patent cross-licensing agreement under which Compaq has agreed to pay IBM a fixed dollar amount in five annual installments. IBM served notice last year to PC clone vendors that it would require royalty payments of 1% to 5% on all systems that it judged had copied proprietary technology used in the IBM Personal Computer, XT and AT lines.

Despite that past threat, the deal announced Friday was couched in carefully neutral language describing an agreement by each company to grant the other a "worldwide, nonexclusive license" on patents filed before July 1, 1993.

Every penny counts

The IBM-compatible PC market is a potentially lucrative source of royalty revenue for IBM

* North American sites only; cumulative value based on average retail prices

SOURCE: WORLDWIDE TECHNOLOGIES
CW CHART JOHN WEIR

Compaq specified that the agreement included IBM's MCA technology but insisted it is not developing and has no plans to develop an MCA-based product line. Industry analysts were generally skeptical about that denial.

The agreement was widely viewed as bolstering IBM's efforts to position the MCA bus as an industry standard while also fortifying Compaq's ability to support any of the three competing PC bus architectures.

The deal also extends to IBM's proprietary reduced instruction set computing and multiprocessing technology, said Mike Swavely, president of Compaq's North American region. An IBM spokeswoman said, "All past liabilities have been addressed. We're starting with a clean slate."

Tandy Corp. and Wyse Technology have already announced

Continued on page 101

DEC pace keeps users on guard

BY ROSEMARY HAMILTON
CW STAFF

BOSTON — These days, if a Digital Equipment Corp. customer blinks, he may miss a whole product generation.

Just six months after launching a multiproduct assault on the desktop market, the Maynard, Mass.-based company last week blasted the industry with another round that includes a sweeping array of reduced instruction set computing-based systems and a revamped VAX line. In addition, the company announced several software products and communications facilities (see story page 6).

The frenetic activity is part of DEC's strategy to simultaneously grab a piece of the emerging RISC-based open systems market and keep its midrange market position firmly in place. DEC, like many other computer companies, is now struggling to serve two masters: the new open systems customer and the long-time user of its proprietary systems.

For instance, DEC tried to outdo Sun Microsystems, Inc. in

Continued on page 6

CA dealt out of N.J. casino games

BY ROBERT MORÁN
CW STAFF

ATLANTIC CITY — Two casinos fear that Computer Associates International, Inc. may be prepared to cash in its chips at this seaside gambling haven. The software giant has been barred from gambling halls here by the New Jersey Casino Control Commission and has given no indication that it will be back.

CA's failure to comply with casino vendor licensing requirements has left Tropworld Casino/Entertainment Resorts, which runs the Tropicana Hotel and Casino, waiting anxiously for the vendor to tip its hand. The Boardwalk Regency Corp., which operates Caesars Atlantic City, has been unable to obtain support since mid-May and is preparing to abandon CA.

"The casino commission said to its regulated companies, 'Don't do business with CA,' " said Michael McElroy, vice-president and secretary of CA. "This wasn't our decision."

Information systems directors for the two casino companies confirmed there were problems with CA but referred all questions to their attorneys. Michael Ray, data center manager at Boardwalk Regency, said he will remove CA-Omniguard and replace it with security software

Continued on page 8

Moon landing + 20 years: A giant leap for space data

BY ALAN J. RYAN
CW STAFF

PASADENA, Calif. — Twenty years ago this week, man took his first tentative steps on the moon and gathered more data than he could analyze. Today, the Magellan space probe is on its way to Venus, where it will generate more data than all previous space missions combined.

Unlike other missions, the data generated by Magellan will not hit the storage vaults to sit undigested, according to Leslie Pieri, team chief for the data management and archive team at the Jet Propulsion Laboratory here.

The laboratory is overseeing the Magellan project for the National Aeronautics and Space Administration.

SOURCE: NASA/JPL

Although much of the hardware being used by the mission's control team is based on older technology, several things will be done differently with Magellan than with other space missions to help scientists use the data more effectively and efficiently, Pieri said.

More than three terabytes of information will be collected during the Magellan mission. The use of optical disks and a single-source catalog located in a central database, from which scientists can retrieve the massive quantity of data, will give scientists faster access to the data, she added.

When data is being

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6 DEC'a Unix platform is a little RISC-y without third-party software.

8 HP lops 10% off its Vectra prices to keep up with the Joneses (and the Compaqs and IBMs).

8 CA denies rumors that its sales force will soon be in the pink — slips, that is.

10 Lotus Release 3.0 upgrade shapes up as one of the most complicated to date.

12 No fast food here: Unisys will dish up 88000-based server aimed at the high end.

12 FAA facilities experience technical turbulence, scrambling flights nationwide.

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101 HP carries the RISC standard on the search for a standard RISC.

Quotable

"I'll believe it when it happens."

REED PHILLIPS
U.S. DEPARTMENT OF COMMERCE

Regarding the chances that he and his IS peers will receive the pay raises proposed by President Bush. See story page 4.

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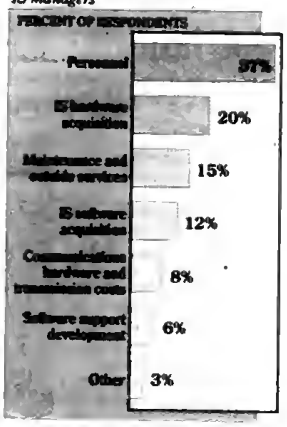
UPDATE

Apollo 11's arrival at (and successful departure from) the moon 20 years ago this Thursday marked the most extraordinary scientific achievement in history. Neil Armstrong's incredibly flimsy landing craft had 30 seconds of fuel left when NASA Mission Control's computers overloaded, forcing Armstrong to land the space jalopy on instinct and guts. The subsequent takeoff, a one-shot deal, had never been field-condition tested. Those of us who witnessed the event on live TV will carry those eerie broadcast images forever. To the team that engineered the event and the tiny crew with the superhuman courage to pull it off, Salud!

1989 IS budget allocations
Derived from a recent survey of 600 IS managers



SOURCE: THE LEDGEWAY GROUP, INC. CW CHART DOREEN DARLE

EXECUTIVE BRIEFING

■ One of the greatest challenges information systems managers face in the 1990s will be improving the effectiveness with which they deliver systems. One approach today is the containment of the costs of developing and maintaining systems. Although this aim can be achieved in many ways, one clearly measurable method lies in improving developer productivity. To this end, the ingrained mentality of "we've always done it that way" and the reluctance of staff members to learn new techniques must be handled carefully — with planning, control and forethought. **Page 65.**

■ Top federal IS executives may be in for pay raises ranging from 8% to 25% under the latest presidential salary proposal. But some of those executives remain skeptical about whether Congress will approve President Bush'a plan to hike the salaries of ranking government officials. **Page 4.**

■ The constant changes in Digital Equipment Corp.'a product lines are keeping longtime DEC customers on their toes. DEC revamped its processor line again with the announcement of VMS-based replacements for the bulk of its VAX 8000 series last week. DEC also continued to build up its family of Unix-based RISC platforms and support for Ultrix. **Pages 1 and 6.**

■ What is the fun of being a standards body if the company that sets the de facto standards and the people who are expected to depend on the standards don't join the party? That is the dilemma in which the Open Token Foundation finds itself as IBM and corporate telecommunications and IS managers offer only tentative support to OTF. **Page 47.**

■ Some observers say the position of data security manager is undervalued. That should change, however, as information systems become more important and processing is increasingly distributed. Data security duties sometimes include contingency planning, disaster recovery and overall information security. **Page 83.**

■ A thorough analysis of needs is essential for IS training organizations. In addition to the skills that are required, it should indicate when they will be needed, the availability of courses and students and the appropriate methods of delivery. Such an analysis can clarify the cost of not providing training. **Page 97.**

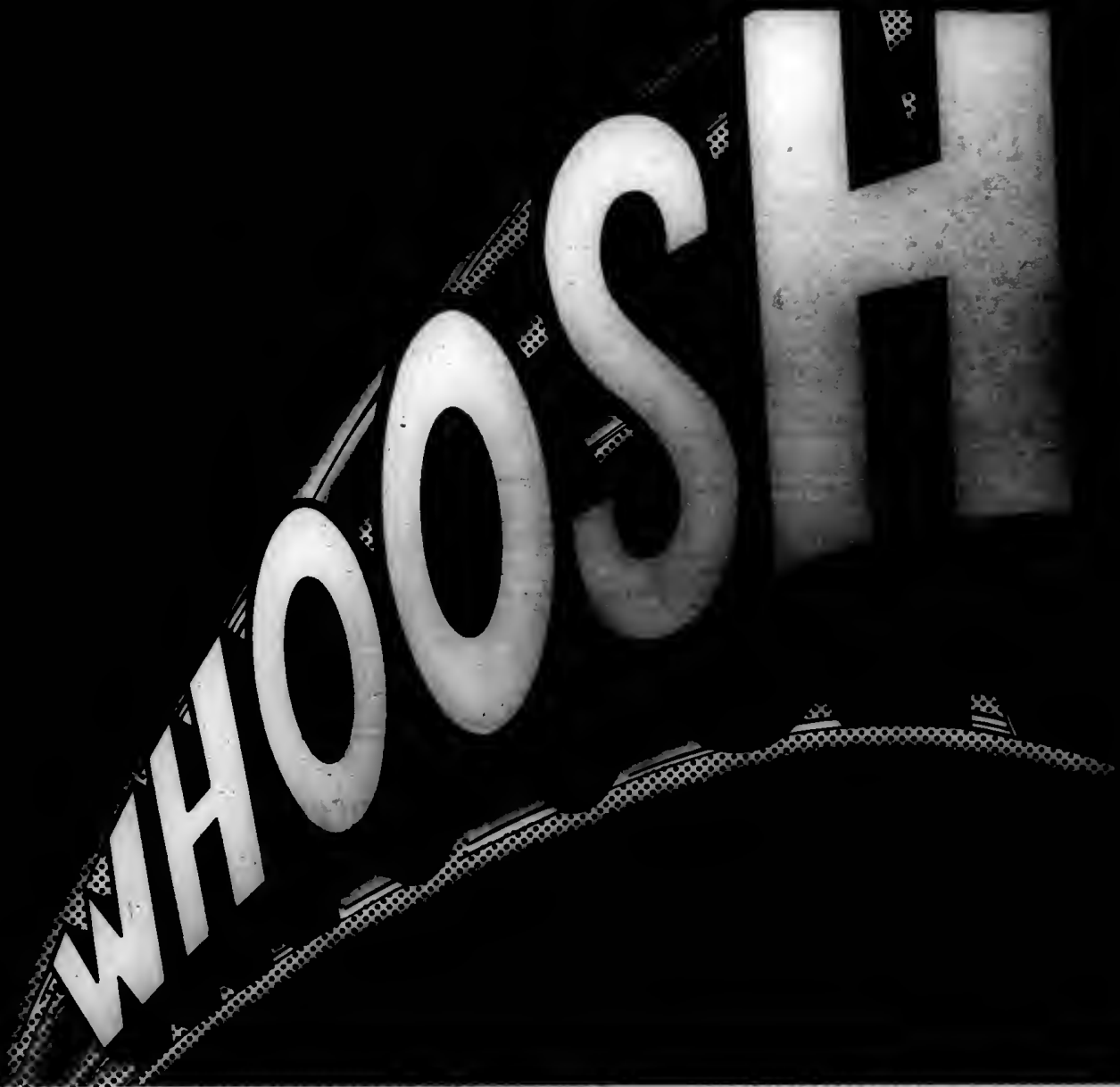
■ Part of being acquired may mean tying a company's computers into the acquisitor's international network. That task is what has kept IS staffers busy at Northern Air Freight since it was acquired by Danzas Ltd. in February. **Page 47.**

■ IBM and Computer Associates are being run out of town. CA can no longer sell its software to Atlantic City, N.J., casinos unless it first submits to state gaming commission rules regarding financial disclosures. **Page 1.** Meanwhile, it appears that Dade County, Fla., will be shifting away from IBM mainframe hardware because county officials charge that IBM reneged on a pledge to stop doing business in South Africa. **Page 14.**

■ The office fax machine may be freed for real business as more states take action to stop the flow of what legislators call "junk fax." **Page 52.**

■ The IS manager who had to buy communications services and products for typical U.S. corporations could have had it worse, reflection on the 1984 breakup of the Bell system shows. It was more confusing for the IS manager who worked within that system. **Page 57.**

■ Former Navy fighter pilot John Stevenson has worked to restore order to Dr. Pepper's IS operations since the merger of that soft-drink maker and Seven-Up last year. The IS group now is getting 30% more work through its system, whereas the operation had been floundering before. Company officials say Stevenson's methodical approach has been a key factor. **Page 57.**



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Fed IS execs hope for a raise

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Information systems executives at the largest federal agencies would get a pay raise under President Bush's recent salary proposal, but they are pessimistic that Congress will approve it.

Bush proposed a pay raise of 8% to 25% for members of the government's Senior Executive Service (SES), a special pay category that generally includes the top information resources management (IRM) executives at large Cabinet-level agencies. For example, an executive at SES Level 5 would get a 19% raise next year from $78,600 to $93,700.

"I'll believe it when it happens," said Reed Phillips, director of IRM at the U.S. Department of Commerce.

Federal IRM managers were bitterly disappointed last February when Congress vetoed a proposed 50% pay raise for employees of the legislative, judicial and executive branches. That proposal failed mostly because of public outrage over the pay boost for members of Congress, they said.

Glenn P. Haney, director of IRM at the U.S. Department of Agriculture, said pessimism about the second try is based on the likelihood that the SES pay raise will be bundled again with the controversial pay raise for members of Congress. "Most of us figure it won't go through this time either," he said.

Congress will not give the SES a pay raise if the legislators themselves do not get one, Phillips added. "They're not going to have us making as much, or nearly as much, as they are," he said.

The Bush administration submitted the salary proposal because of concern about a "brain drain" in the federal work force. Executive pay in the federal government is 40% below the level of compensation in the private and nonprofit sectors, according to the Senior Executives Association, a group representing federal career executives.

Plugging the gap

Bush expressed "concern over the effect the pay gap is having on the federal government's ability to attract the skilled senior executives necessary to direct the complex, critical functions of the federal government."

"No one considering a government career expects pay equity with the private sector, but at a point, the gap becomes insulting," said Edward J. Hanley, director of IRM at the U.S. Environmental Protection Agency.

"I'm certainly looking forward to the raise. I've got kids about to go to college," he said.

Bush also proposed a 25% pay boost for political appointees, such as the assistant secretaries of management and administration, who typically are the supervisors of federal IRM managers. The salary for assistant secretaries would rise to $100,900.

However, many of the IS managers at various sub-Cabinet bureaus and agencies are not part of the SES; they will receive the 3.7% raise scheduled for rank-and-file federal employees.

Thomas Rinehart, IS chief at the Bureau of Printing and Engraving, said he is not happy with the disparity. "The rest of us ought to get more than 3.7%, since we do most of the work," he noted.

But William J. Cassidy, chief of information processing at the Farm Credit Administration in McLean, Va., said he has no animosity toward the SES. "There are some very bright people in SES, and they are obviously underpaid, so I think they have the raise coming to them. If they don't get it, we're going to lose them," Cassidy said.

Rinehart said recruiting IS staff is nearly impossible in the federal sector. "By the time I get people to accept [an offer] and get them halfway through the security clearance, their private-sector company has already upped their pay beyond what we can reach," he said.

Pay proposal

Recommended raises for three pay grades that affect many federal IS managers cover a wide range

Pay category	1989	Proposed for 1990	Percent increase

SOURCE: THE WHITE HOUSE AND OFFICE OF PERSONNEL MANAGEMENT — CW CHART: DOREEN DAVIES

Zenith to unwrap new laptop to compete with NEC offering

BY ELLIS BOOKER
CW STAFF

GLENVIEW, Ill. — Zenith Data Systems this week will fire the latest salvo in the laptop personal computer war, training its sights squarely on the diminutive Ultralite V30 processor-based laptop from NEC Home Electronics, Inc.

Although Zenith confirms it will introduce a lightweight, "notebook-size" laptop Wednesday in New York, it has released only one detail about the machine. A company spokesman would reveal only that the laptop will use a 2-in., 720K-byte minidisk. Most PCs and laptops today use either 5¼- or 3½-in. disks. The diskless NEC Ultralite sidesteps the issue entirely and uses a 1M- to 2M-byte "silicon disk" for storage.

When asked about compatibility with current disk standards, the Zenith spokesman said many users run telecommunications software programs rather than swapping floppy disks to transfer data between their laptop and desktop computers. The floppy drive, he said, will be similar in size but different from those used in a new line of cameras by Canon, Inc.

Zenith's new PC — its first since April 1988 — will reportedly weigh around 5 lbs.; use an 80C88 microprocessor; and feature replaceable batteries, a reflective LCD screen and 1M byte of random-access memory. According to market research company Dataquest, Inc. in San Jose, Calif., Zenith had 25% of the overall laptop market last year.

While the Zenith spokesman declined to make a feature-for-feature or dollar-for-dollar comparison with NEC's product in advance of the rollout, he nevertheless snubbed the critically acclaimed 4.4-lb. Ultralite, which costs nearly $3,000, calling it "pound for pound the most expensive PC ever made." He refused, however, to say how much Zenith's own machine will cost.

Morris felony charge expected by end of July

BY MICHAEL ALEXANDER
CW STAFF

The U.S. Justice Department is expected to announce next week that it will file felony charges against Robert T. Morris Jr., the reputed programmer of the worm that shut down computers on the nationwide Internet network last November.

Morris is likely to be charged under provisions of the Computer Fraud and Abuse Act of 1986, among other statutes. The law makes it a felony to access a "federal-interest computer without authorization" or "prevent authorized use of any such computer or information." A felony conviction "can lead to fines of $250,000 and fines of up to $100,000 in the case of misdemeanors that are punishable by imprisonment for more than six months, as the misdemeanors in the Act are."

"It's definitely a felony indictment," a source close to the case said. "I've been told that the government is taking a hard line." The source said that an official of the Justice Department contacted him to inquire about his availability as an expert government witness for a trial that is expected to begin in September.

Justice Department officials in Washington, D.C., declined to comment on whether the department had reached a decision to prosecute Morris. However, Andrew Baxter, assistant U.S. attorney in Syracuse, N.Y., confirmed that the Justice Department is planning to make an announcement related to the case at the end of the month.

Morris was unavailable for comment and is believed to be staying at his parents' home in Arnold, Md. When asked if his client had been informed by the Justice Department of its decision, Thomas Guidoboni, the Washington, D.C., attorney for Morris, replied, "A decision has been reached, but I cannot comment beyond that."

Morris, a former Cornell University computer science graduate student, allegedly concocted the worm program that ultimately penetrated some 6,200 computers on Internet last year. The worm, ostensibly devised to expose the network's security weaknesses, replicated uncontrollably, clogging the memories of infected computers until they could no longer function.

Although the renegade program did not directly damage the affected computer systems, the Computer Virus Industry Association estimated that it cost nearly $100 million in lost computer time and manpower to eradicate the worm and restore the network to normalcy.

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	Los Angeles	July 20fm August 15m
	Newport Beach	July 18k August 10o
	Ontario	July 27f
	Sacramento	July 19k
	San Diego	July 13f
	San Francisco	July 25 August 24
	Santa Clara	July 13fm August 17fb
	Universal City	July 6f
CO	Colorado Springs	August 24 / Aug 24g
	Denver	July 20 August 22gk
CT	Farmington	August 3f
DC	Washington	July 13gk August 17g
FL	Ft. Lauderdale	July 14k
	Jacksonville	August 9f
	Melbourne	August 23k
	Orlando	July 12f
GA	Atlanta	July 19f
	Savannah	August 10k
IA	Des Moines	July 19
IL	Chicago	July 19fm August 23fb
	Springfield	July 11
IN	Ft. Wayne	July 12
	Indianapolis	July 18k August 29f
KS	Wichita	August 15
KY	Lexington	July 18
LA	Baton Rouge	August 24m
	New Orleans	July 27f
MA	Boston	August 1f
	Burlington	July 12a August 10g
MD	Baltimore	July 18f
ME	Portland	July 19
MI	Dearborn	July 11bm
	Grand Rapids	July 13m
	Lansing	August 10f
	Troy	August 8am
MN	Minneapolis	July 12k August 9af
MO	Kansas City	August 3fk
	St. Louis	July 11fk August 8fm
NC	Res Tri Park	July 26k
NE	Omaha	July 6g
NJ	Asbury Park	August 8g
	Iselin	July 20f July 22f
NM	Albuquerque	July 20g
NY	Albany	July 11f
	East Syracuse	August 10k
	Melville	July 19f August 16a
	New York City	July 12f July 26 August 9f August 23p
	Rochester	August 24f
OH	Akron	August 24f
	Cincinnati	July 20fk August 17m
	Cleveland	July 26p
	Columbus	July 5 August 15f
OR	Oklahoma City	August 2fo
OR	Tigard	August 22
PA	Harrisburg	August 15
	King of Prussia	August 15f
	Philadelphia	July 6f
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RI	Providence	July 11
SC	Charleston	July 20k
	Columbia	July 19k
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	Dallas	July 11fk August 1fo
	Ft. Worth	July 18o
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UT	Salt Lake City	July 25
VA	Norfolk	July 11g
	Richmond	July 2*f
WA	Bellevue	July 20
WI	Madison	August 17f
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- a Macintosh Networking
- f Oracle Financials
- k CASE/Application Tools
- l Oracle Mail
- m Computer Integrated Manufacturing
- o On-line Transaction Processing
- p PC Product Solutions
- u Unix

Please note

- g Seminar is held for Federal Government only
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COMPUTERWORLD

DEC strengthens NAS system glue

BY AMY CORTESE
CW STAFF

Digital Equipment Corp. — like many of the computer industry's old guard — is faced with the dilemma of satisfying its traditional base of proprietary customers while pushing ahead with promising new technology based on open systems. And, like other vendors, it recognizes that the key to this strategy's success is software to tie it all together.

Last week, DEC expanded on its brand of software glue, called Network Application Support (NAS). NAS is a set of common application services intended to integrate applications across dissimilar environments, tying together VMS, Ultrix and a variety of desktop platforms. Unlike IBM's Systems Application Architecture (SAA), DEC's software architecture embraces its Unix operating environment, as well as other vendors' platforms, such as the Apple Computer, Inc. Macintosh and MS-DOS-based personal computers.

Gary Ragsdale, manager of information systems at Bonneville Power Administration in Portland, Ore., whose firm uses systems from DEC, IBM, Wang Laboratories, Inc. and a host of others, said, "We're always looking for products that will help us communicate across various platforms."

NAS has evolved from mail and file-sharing services announced in January 1988 to include Decwindows, a compound document architecture (CDA) and repository service. At last week's product rollout, DEC expanded NAS with three services for database access, data conversion and printing:

- VAX SQL/Services provides remote access to RDB from desktop applications running Ultrix, VMS or MS-DOS. Based on a client/server model, SQL Services requires that the user write applications that call services from the server portion.

Currently, SQL Services is available only for RDB; third-party VMS- or Ultrix-based database management systems are not included. DEC plans to extend the services to its future Ultrix offering. VAX SQL/Services is included with VAX/RDB Version 3.0.

- CDA Converter Library provides two-way conversion between data formats supported by DEC's CDA and various external formats, allowing for disparate text, graphics, images and spreadsheets to be shared.
- Decprint, a series of printing facilities designed to simplify printing.

Though most NAS services are available, many users have not yet installed the latest releases of software to take advantage of them. And third-party applications have been slow to arrive on the market.

Nonetheless, DEC received high marks from analysts for its integration scheme.

Michael Milliken, vice-president at Patricia Seybold's Office Computing Group, said that DEC has a significant lead on other computer vendors such as IBM and Hewlett-Packard Co. in providing a comprehensive software architecture.

Awaiting RISC software

With the introduction of its most powerful RISC processors, DEC has made its strongest case yet for Ultrix.

But the availability of key third-party software will be crucial to the operating system's success. The message from DEC was that in deciding between VAX and RISC, the choice should be based on the desired software application. However, for the time being, that stacks the deck in favor of VMS, with more than 6,000 applications offered by third-party developers. DEC said only 70 applications are currently available for its RISC-based Ultrix systems.

Underscoring this theme, one user, Gerald Siddons, director of scientific computing for the division of biostatistics and epidemiology at the Dana-Farber Cancer Institute in Boston, said he is deciding between DEC's RISC workstations and Sun Microsystems, Inc. workstations for his division.

While Siddons said he would like to go with DEC, the software he wants to use, primarily the SAS statistical package, is not yet available for DEC RISC platforms. "That's been the biggest criticism [of DEC] — not enough software," Siddons explained. Conversely, he said, Sun "has a plethora of software available. It's a great selling point."

Siddons said he must decide whether to wait for the software applications for DEC or go with Sun workstations — his second choice — now. Siddons said SAS would be available on DEC's RISC next year, so the decision has become a matter of exercising patience or going with the second choice.

However, DEC was ready last week with an army of more than 200 software developers who have promised to develop or port applications to its RISC platforms.

AMY CORTESE

DEC

FROM PAGE 1

the RISC market last week, by introducing what it claims is the broadest range of RISC products available, including a workstation for less than $8,000, which the company said is the cheapest in the industry. At the same time, DEC brought out new high-end VAXs and promised a vector processing capability to longtime VAX customers. This facility will be the first major architectural change to the VAX in more than a dozen years.

While customers praised DEC's aggressive behavior, they also said the company is dangerously close to doing too much. As DEC tries to be the price/performance leader in two arenas, customers are finding it hard stay in step.

For users, though, there will be some relief ahead. DEC officials said last week that the firm will move away from the fast pace of the last several months and slow down the product rollouts to an 18-month cycle.

Keeping up

The changing of the guard in the VAX line alone this year could give a user a headache. "It's sort of a pain, with all they've been doing, [to keep] up with it," said Guy Russo, manager of MIS planning and development at Meredith/Burda in Des Moines, Iowa. "What's ironic is we're in the process of purchasing a 6300."

The VAX 6300, out just six months ago, was replaced last week as the highest performing 6000 system by the 6000 Model 400. The 6300, renamed the 6000 Model 300, was bumped to a mid-tier 6000 system.

To round out the 6000 series, DEC introduced a new low end, called the VAX 6000 Model 210 last week, not to be confused with the now-defunct 6200. In January, the 6300 canceled out the 6200, which had been introduced the previous year.

Meanwhile, the 6000 series replaces the VAX 8000 series, which has not been officially canceled but will be phased out.

"I question the wisdom of doing it so quickly, but as long as what we have performs well, that's my real concern," said Maurice Hebert, director of MIS at Hinkley, Allen, Snyder & Comen, a law firm in Providence, R.I. Hebert runs a VAX 8530 and a 6220, neither of which has a future, according to DEC.

Several users contacted last week said they ultimately back DEC's decision to juggle open systems and VAX product lines.

"They're doing a darn good job," said George Reid, director of MIS at Sanford C. Bernstein & Co. in New York. "With RISC, Unix and MS-DOS services, I think it's superb. I'm looking for a systems integrator, and that's where they're starting to make great strides." What is more, VAX users in particular have faith that DEC will not abandon the line for RISC, as some industry observers have suggested.

"They aren't moving away from VMS," said a user at a Canadian utility company who requested anonymity. "I think they'll expand both lines, and I'm certain VMS will be our mainstream system for a while."

Don't look now — *it's another DEC generation*

A low-price generation

The latest VAX and RISC systems trotted out by DEC together provide a performance range of 2.5 to 36 million instructions per second (MIPS) and offer some of the cheapest system prices DEC has ever offered.

The new VAXs are as follows:

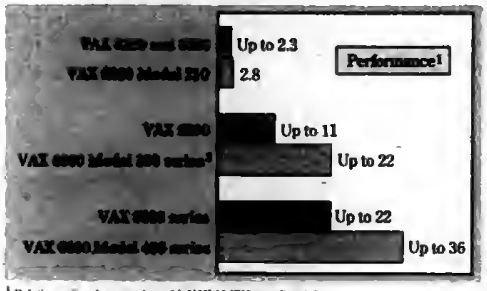
- The 6000 Model 400S, a multiprocessing series that can be expanded to a six-processor configuration. The systems effectively replace the 8800 series. Prices start at $239,000.
- The 6000 Model 210, the new low end of the 6000 series, with a performance rating of 2.8 VAX Units of Performance. The entry-level price is $129,000.
- The Microvax 3100, which replaces the Microvax 2000. The multiuser system starts at $6,680 and offers 40% more performance than its predecessor.

On the RISC front, DEC introduced the following:

- The Decsystem 5800, which can be configured as the 5810 or, as a dual-processor configuration, the 5820. The uniprocessor version clocks in at 18.7 MIPS, and the 5820 doubles that performance. An entry-level system costs $121,500.
- The Decsystem 5400, which will serve as DEC's midrange RISC system, performs at a slighly slower rate than the 5800 but will be priced much lower. The 16.6-MIPS machine will cost $49,900.
- The Decsystem 2100, a low-end RISC box that will be offered at $7,950 for a monochrome version; a color version will cost $11,450.

Shaking up the lineup

The DEC VAX 6000 family takes shape as the older VAX 8000 series fades away



[1] Relative units of processing with VAX-11/780 equaling 1.0
[2] Introduced as 6300 series in January

CW CHART: DOREEN HAHLE

NETWORK DATAMOVER:

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SYSTEMS CENTER

NEWS SHORTS

Optoelectronic venture advances

A cooperative effort aimed at ensuring future U.S. clout in computers through optoelectronic circuit technology entered the formal planning stage last week. The U.S. Department of Commerce, six major industrial companies and the David Sarnoff Research Center joined to plan research and development on the merger of very large-scale integration, high-speed gallium arsenide circuitry and optoelectronics on a single chip.

Motif goes public

Six months after announcing its decision to blend Digital Equipment Corp.'s Decwindows tool kit with the Hewlett-Packard Co. and Microsoft Corp. common user interface, the Open Software Foundation unveiled its Motif graphical user interface last week. On the standards front, X/Open will continue its efforts to specify an interface standard this week in London.

Groups endorse copyright bill

The Computer and Business Equipment Manufacturers Association, Adapso and the Software Publishers Association last week endorsed a bill (H.R. 1131) intended to close a loophole in federal copyright laws. The loophole apparently allows state agencies and universities to duplicate copyrighted software programs with impunity [CW, March 27].

Sun freezes hiring

Sun Microsystems, Inc. officials confirmed last week that a hiring freeze has been imposed on non-revenue generating areas of the company to counter a sudden profit squeeze. The move, which became effective July 1, will affect two-thirds of the company's nearly 10,000 workers but leaves staffers in the sales and support divisions untouched, Sun officials said. The hiring restrictions — which have been coupled with cutbacks in employee travel and discretionary spending — will remain in place for at least three months.

Manufacturers claim clean air gains

An association of Silicon Valley computer and semiconductor makers called the Santa Clara Manufacturing Group claimed last week that its member companies reduced pollutant releases by 43% in 1988 compared with 1987. But an official of the Silicon Valley Toxics Coalition countered that the "real, honest reduction is more like 10% to 15%" because much of the gain claimed by the companies is due to new methods of calculating emissions and shutting down fabrication lines.

Think tank studies information age

A think tank called the Congressional Institute for the Future kicked off a two-year campaign last week to educate members of the U.S. Congress about the issues and technologies of the information age.

Ely resigns from Unisys

Veteran computer industry executive Paul Ely announced his resignation from Unisys Corp. last week. Ely stepped down from his position as a senior vice-president at Unisys, where he was in charge of the Network Computing Group that had belonged to Convergent Technologies, Inc. before Unisys acquired Convergent last year. Ely, who had been an executive with Hewlett-Packard Co. before joining Convergent, will be replaced by Unisys Vice-President Cyril Yansouni.

New round of telecom discounts

AT&T last week announced its Digital All-Stars program, yet another set of volume discounts for Accunet customers. AT&T improved discounts under its existing Multi-Service Volume Pricing Plan as much as 50% and made the plan available to users with as little as $10,000 per month in intercity billing. Also introduced were Digital Partnership Plans, offering discounts of up to 24% below monthly rates for customers who sign one- to five-year contracts for Accunet T1.5 or T4.5 services.

Casino

FROM PAGE 1

from another vendor.

According to Richard Franz, the commission's deputy director of the licensing division, CA was first told to file a license application with the commission in January 1989. On Feb. 23, CA was notified that it had until April 18 to file the application; a final notice was issued April 27, giving the company 15 days to terminate business with all casinos in Atlantic City.

Under New Jersey gaming regulations, casinos must inform the commission of the amount of business they transact with vendors each month. If a vendor does $50,000 in business with a single casino or $150,000 throughout Atlantic City, it must file for a license, Franz said.

Long shots

"The Casino Control Commission requires quite an extensive filing, and its scope seems to reach persons we believe really have no reason to be involved with the Casino Control Commission," McElroy said.

He added that the commission requires background on corporate officers, directors, direct sales personnel and employees — and two levels of their supervisors — who would be in direct contact with the casinos.

As a public company, CA already files disclosure documents and information to the Securities and Exchange Commission. "It seems to CA that the purpose of these regulations or requirements of the Casino Control Commission really were intended for organizations wholly different in nature from a public company such as Computer Associates," McElroy said.

Steven Bolson, chief attorney at Tropworld, said that the commission's licensing procedures are rigorous and that large companies sometimes feel that disclosure of confidential information is a problem given the amount of business concerned.

Robert Ryler, vice-president and general counsel of Boardwalk Regency, noted, "If CA is interested in doing anything in Atlantic City, they are not acting in good faith."

Ryler said that he tried to talk to CA attorneys and a CA vice-president on four occasions. "The legal people at Computer Associates refused to talk to me," Ryler said. "Computer Associates is really the most arrogant company that I have ever seen."

As a result, Boardwalk Regency, which uses five CA products, is taking its business elsewhere. Ryler predicted that building security applications around new software programs will cost the company more than $100,000.

Bolson said that the problem with CA has yet to become a crisis at Tropworld. However, he said that if CA continues to be barred from operating in Atlantic City, "it would inconvenience us to say the least."

According to the rules of the game, if CA wishes to resume business in Atlantic City, it must file a license application for about $250 and wait about 30 days before resuming business.

McElroy said he did not know how long it would take CA to get back in business in Atlantic City, but he is now in discussion with commission representatives and reviewing the requirements. "CA may file an application and a petition to the commission for exemption for some of the requirements," he said.

HP cuts PC prices

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Citing little more than competitive pressures, Hewlett-Packard Co. lowered prices on its 25-MHz Intel Corp. 80386-based Vectra line by nearly 10% last week.

IBM and Compaq Computer Corp. are No. 1 and No. 2 in units sold in the personal computer market, according to May statistics from Storeboard, Inc., a Dallas-based company that tracks PC sales. HP, while increasing sales, was ranked seventh.

In May, HP announced a shortfall in profits in its second quarter. However, Robert Puette, general manager of the company's personal computer group, said that price cuts will "not make a difference in the next quarter."

Puette said that personal computer sales are up "significantly" over the company's plan and hinted that PC sales may be near $1 billion this year. That would mean nearly one million units sold.

HP's Puette *announced price cuts on Vectra line*

Price reductions are as follows: the Vectra RS/25C Model 304E, $14,399, down $1,300; Model 154E, $12,549, down $750; Model 150E, $10,149, down $750; and Model 100E, $9,549, also down $750.

Rumors attacked as untrue as CA reassures investors

BY NELL MARGOLIS
CW STAFF

GARDEN CITY, N.Y. — Tales of a secret weekend summit of Computer Associates International, Inc.'s (CA) executives and a reported reorganization including a blizzard of pink slips for the company's nationwide sales force last week prompted CA to break with its long-standing tradition of refusing to comment on rumors.

"The spate of recent rumors about changes in our sales force and management team being circulated among the investment community are totally untrue," the company stated. No targeted or concerted layoff of salesmen either had been or was about to be executed, said a company spokeswoman. CA representatives were unable to confirm or deny that the weekend executive conclave had taken place.

On Wednesday, CA stock fell 1¾ points to close at 16⅞ in what turned out to be the New York Stock Exchange's heaviest trading of the day.

While the rumors might have played their part, however, analysts agreed that at least part of the frantic trading in CA stock was attributable to the week's earlier announcement from CA, in which the company warned that revenue growth for the first fiscal quarter, closed June 30, will more than likely underperform projection by approximately 15%.

First-quarter profits, according to CA, will be on target with Wall Street's expectations. Revenue, however, should come in at closer to 30% over last year's first-quarter figure, rather than the 45% increase earlier estimated.

The company cited unfavorable exchange rates as being largely responsible for the differential.

In addition, said investor relations manager Deborah Coughlin, CA experienced a lower than usual late-quarter sales surge, owing to postponed decisions on the part of certain prospective database customers, in light of CA's pending acquisition of database competitor Cullinet Software, Inc.

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Lotus unsnarls complicated upgrade

BY DOUGLAS BARNEY
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. hopes it has the largest upgrade in software history. Whether or not it meets that goal, the upgrade to 1-2-3 Release 3.0 is a clear contender for the most complicated, users said.

Ironically, the one-year delay in shipping Release 3.0 has provided Lotus with additional time to ready an aggressive conversion support campaign, and users seem pleased with the effort. According to Bob Martin, manager of executive support systems at Eaton Corp., Lotus is going beyond the call of duty in providing personal computer support professionals with extensive upgrade information. "They are dotting every i," Martin said.

Lotus is prepping a variety of programs aimed at nipping problems in the bud. One of the most critical is a utility disk, code-named Check 1-2-3, that allows users to test their machines for compatibility before buying and installing Release 3.0. Expected to be released next month, according to company officials, the free disk will check the processor, BIOS and graphics adapter.

It will also check system memory, not only to determine if there is the required 1M byte but also whether the memory is configured as Extended Memory. Many memory boards are set up as Extended Memory, which is used for paging schemes that allow users to use more than 640K bytes for data. The Extended Memory used by Release 3.0 is more conventional and is used for random-access memory disks and large memory operating systems such as Unix and OS/2.

The utility is particularly important because the vast number of potential hardware configurations ensures some incompatibilities. Early read-only memory BIOS products may not run Release 3.0 because they implement obsolete and incompatible methods for switching between real mode (640K-byte bound) and protected mode, which allows the system to address up to 16M bytes of RAM.

While earlier versions of 1-2-3 were restricted to real mode, Release 3.0 uses a so-called DOS Extender from Rational Systems, Inc. to run in protected mode. Lotus national sales manager Dave Barrett admitted that some BIOS products would not be able to handle Release 3.0 but added that users could easily upgrade to a more current BIOS.

Figuring cost

While Lotus is intent on giving advice, Jeffrey Knepper already has a method for evaluating the upgrade. Knepper, director of advanced technology-tax at Touche Ross & Co., will first do an inventory of hardware to determine which machines are capable of running the product. This includes a check of the processor, memory and display.

"Once you figure out the population, then you can figure the real cost of the upgrade," Knepper said.

"This will be the most complicated upgrade to figure out, and the easiest to execute," he added, arguing that once the machines are in order, loading and using the new software will be a simple task.

Other upgrade-smoothing efforts began months before the first shrink-wrapped copies shipped. About a month and a half ago, Lotus began shipping the Information Center Kit, which includes specification sheets and other information needed to start product evaluation.

About a month ago, shortly before the formal shipping of the product, Lotus sent users a kit that included stable — but still pre-release — copies of Release 3.0.

To further ease administrative aspects of the upgrade, Lotus is offering a master agreement under which any company that pledges to upgrade more than 50 units does not have to send back the original program disks.

Despite the occasional glitch, users expect a high level of hardware compatibility. So far, Lotus has tested Release 3.0 against 106 possible machine and operating systems and created 7,900 separate network tests. The tests, which have already cost $15 million, are continuing.

The package is currently certified to run on IBM Personal Computer ATs and Personal System/2s with at least an Intel Corp. 80286 processor, most machines from Compaq Computer Corp. and two Toshiba Corp. laptops. Certification means that Lotus support can answer hardware-related questions. The firm will release updated certification lists on a quarterly basis.

Because of the lack of broader testing, however, shops with a standardized PC environment, such as Figgie International, Inc. in Willoughby, Ohio, will have an easier time of it. Under IS Director Walter J. Hayes, Figgie's micro department has clear standards for hardware and software, including the decision to buy largely 80286-based machines.

Some shops are raring to upgrade. At United Telephone Co. of the Northwest in Hood River, Ore., virtually all 1-2-3 users will upgrade. Of those users, only 30% will upgrade to Release 3.0. The rest will move to the less-demanding Release 2.2, said Roy Schwartz, an information center consultant at the phone company.

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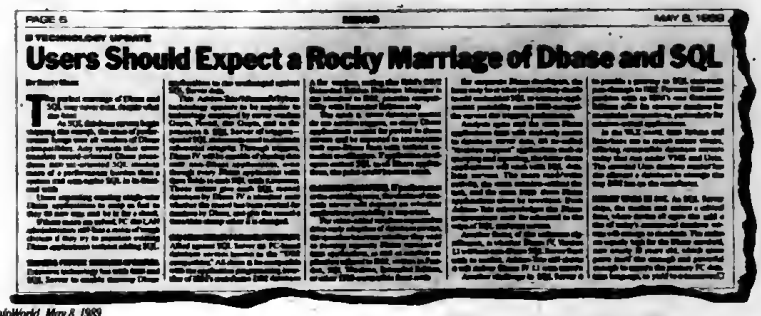
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TECHNOLOGY UPDATE

Users Should Expect a Rocky Marriage of Dbase and SQL

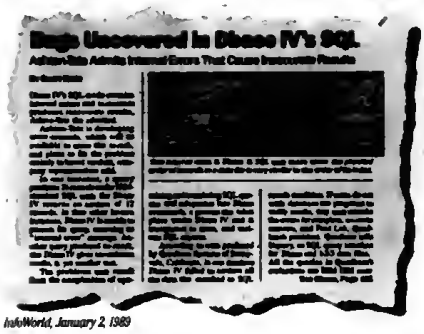
InfoWorld, May 8, 1989

SQL not Dbase forte, test finds

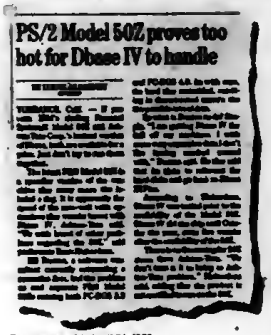
Ashton-Tate promises to correct query flaws after competitor criticism

Data View

Computerworld, January 2, 1989


Bugs Uncovered in Dbase IV's SQL

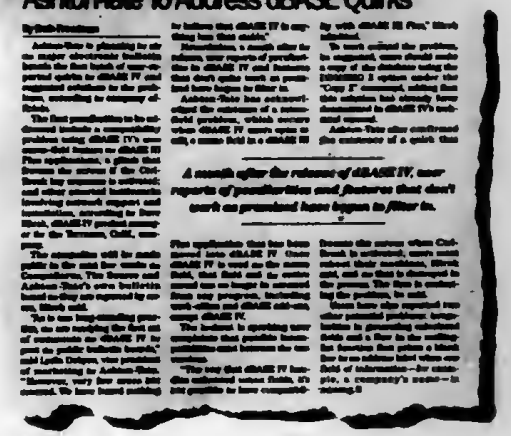
InfoWorld, January 2, 1989


PS/2 Model 50Z proves too hot for Dbase IV to handle

Computerworld, April 24, 1989

Ease, Speed or Power: dBASE IV Developers Must Choose One

PC Week, January 23, 1989


Ashton-Tate To Address dBASE Quirks

A month after the release of dBASE IV, user reports of problems and features that don't work as promised have begun to filter in.

PC Week, December 5, 1989

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FAA computer snafus delay flights

BY PATRICIA KEEFE
and ELLIS BOOKER
CW STAFF

Back-to-back technical snafus earlier this month at Federal Aviation Administration (FAA) facilities serving Chicago, Boston and Southern California airports resulted in delayed and canceled flights that boomeranged to affect flights nationwide.

The apparently unrelated incidents occurred in quick order. Following a software modification July 6 on an IBM 3083 at the Air Route Traffic (ART) Control Center in Aurora, Ill., all the CRTs in the center went blank; however, no data was lost, according to Dan Johnson, an air-traffic control specialist at the Aurora center.

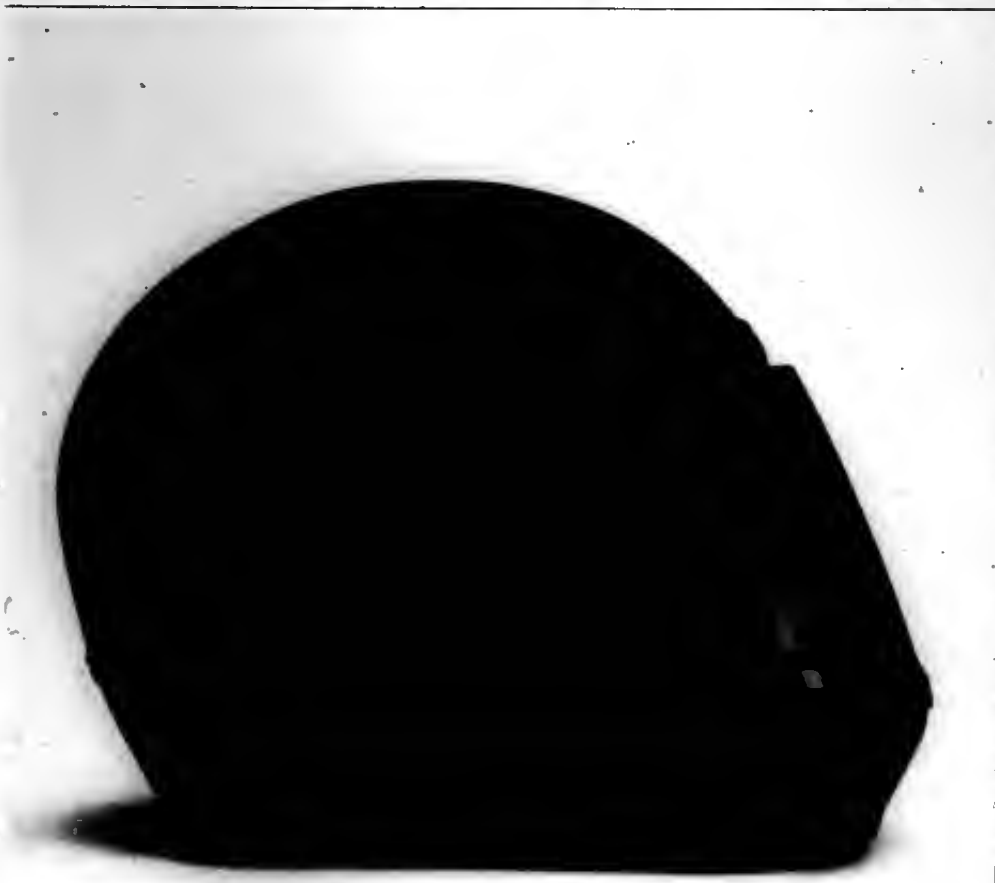
The outage lasted an hour and a half, and service began to be restored around 10 a.m. However, flight delays continued throughout the afternoon because of backed-up traffic throughout the national system.

A "massive telephone company failure" attributed to area thunderstorms cut communications July 7 between the FAA's Nashua, N.H., ART Control Center and Logan International Airport's flight control tower in Boston, said Paul Bagley, manager of the Airways Facility Division for the FAA's Northeast region.

The problem was traced to a power outage at a New England Telephone & Telegraph Co. (NET) switching center in Manchester, N.H., which killed the interface between the FAA's ART 3A air traffic terminals at Logan and the center's IBM 3083, eliminating many data inputs. After meeting with the FAA last Thursday, NET, which has power backup capability, agreed to implement some design changes at the switch center Bagley said. The redesign will be deployed throughout August and September.

Broken wires in three memory modules at the FAA's Coast Terminal Radar Approach Control (Tracon) facility on the El Tora Marine Base in Santa Ana, Calif., disrupted traffic July 8 at Southern California airports. Traffic controllers use the computer displays to enhance data available through their radarscopes, said Jim Panter, Coast Tracon's air traffic manager.

An overheated system reset itself 100 times or more, wiping data off traffic controllers' screens. This prompted controllers to deliberately slow air traffic for about 12 hours.



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COMPUTER ASSOCIATES

Unisys plans 88000-based server line

SAN JOSE, Calif. — Unisys Corp. is planning to build a new high-end server line based on Motorola, Inc.'s 88000 reduced instruction set computing chip, the two companies said last week. The product, already under development, would complement Unisys' Convergent Technologies, Inc. line of Motorola 68000-based servers.

The Unisys Network Computing Group (NCG) said the high-end server would be based on the 25-MHz version of the Motorola 88000 and would be binary-compatible with the older Motorola 68000-based line.

"We'd like to be able to announce the product next year," said Eric D. Carlson, senior vice-president and general manager of the Unix Systems Group at the NCG. "And we're planning to ship the product shortly after the announcement." He emphasized that Unisys has no plans to use the Motorola 88000 as a workstation engine.

The server could end up with fault-tolerant features, based on the use of multiple 88000 microprocessors, Unisys said. Its design would be optimized to handle the multiple I/O calls associated with local-area network-to-host links, Carlson said.

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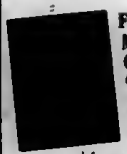

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COMPUTERWORLD

South African ties cost IBM Dade County business waiver

BY J. A. SAVAGE
CW STAFF

MIAMI — Six months after the Metropolitan Dade County's South Africa/Namibia Appeals Committee gave IBM a waiver to allow it to continue doing business with the county despite IBM continuing to ship products to South Africa, the waiver was revoked.

IBM told the county that it would sever ties with its spin-off company, Information Services Management Ltd. (ISM), in South Africa once its hardware and software distribution contracts expired in five and three years, respectively, according to Sam Brunt, minority business specialist for the county.

IBM had $100 million in sales through ISM in 1988, according to The Africa Fund, a New York-based nonprofit watchdog organization.

In a letter officially denying IBM its waiver June 28, County Manager Joaquin G. Avino stated that "the absence of commitment for a full divestment plan ... leaves us no choice but to revoke conditional eligibility."

According to Brunt, IBM representatives said at the first meeting of the committee in December 1988 that after the contracts were up, IBM would no longer have ties with South Africa.

Responding for the two IBM representatives, an IBM spokesman denied they made such a commitment. "There was no understanding that our waiver was conditional," the spokesman said, adding that the representatives made a presentation on IBM's $15 million economic education program for South African blacks.

While Brunt said that all the members of the committee recall the IBM representatives' promise to cut South African ties, he added that there was no record of the meeting because the tape recorder was not functioning.

A "selective procurement" law was passed in Dade County in 1987 to discourage agencies within the county from doing business with companies that have ties to South Africa. Enforcement power was added in July 1988.

Dade County is a substantial IBM site, with two mainframes, a 3090 Model 400, a 3084 Q64, a 4341 and numerous System/34, 36 and 38s, according to Carl Trauger, executive assistant to the director of computing services.

Potential software disaster

The waiver denial will likely change information systems hardware but not software, according to Trauger. "If we were not allowed to do business with IBM at all, it would be a disaster as far as software," he said.

Now, each time the computing services department needs to buy equipment valued at more than $50,000 or services for more than $25,000, the agency has to go through an "extra layer" of bureaucracy, according to Trauger. The layer is a waiver granted on a case-by-case basis for a specific purchase.

"Admittedly, it adds time and uncertainty, but we have to comply as best as possible. And if you're locked into a particular vendor, you have to appeal," he said. The county is currently locked into IBM's MVS operating system, Trauger said.

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MCDONNELL DOUGLAS

Intel steps in for Olivetti as PC supplier to AT&T

BY PATRICIA KEEFE
CW STAFF

NEW YORK — AT&T is expected to unveil the replacement Tuesday for its largely unsuccessful partnership with personal computer supplier Ing. C. Olivetti & Co.

Stepping up to bat this time for AT&T is Intel Corp., which will field a new line of AT&T PCs said to be optimized for Unix and networking.

Sources close to AT&T said the new PC line — codenamed Cascade — will feature two Intel 80386 boxes supporting "big memory and big disk capacity." These include a 16/32-bit 386SX-based PC featuring a 16-bit data path and a faster 33-MHz 386 offering a full 32-bit data path. AT&T has also been mulling support for the Extended Industry Standard Architecture chip, said a source who cited internal AT&T documents.

The agreement between the two vendors calls for joint development of PCs designed to support AT&T's current network and computer offerings. AT&T also said it will co-develop a multiprocessing version of AT&T's Unix System V/386 operating system with Intel.

Separately, AT&T Microelectronics and Intel's Folsom microcomputer division said they will jointly market and develop integrated circuits for local-area networks and Integrated Services Digital Network nets.

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EDITORIAL

Counting ahead

THERE WAS A time not long ago when the business activities of major accounting firms generated all the excitement of a croquet match — maybe not even that much.

That's because the nature of their work consisted largely of reviewing the books of corporate America with legions of accountants, and accountants can be, well, accountants.

But with all the major accounting accounts accounted for, the big bean-counting firms began searching for fresh veins to mine. They hit some serious pay dirt in the consulting business, computer consulting in particular.

These initial expeditions, most predominantly by Arthur Andersen & Co., met with some ardent opposition from the existing software and services industry. Adapso, the services companies' mouthpiece, charged that major audit firms violated the integrity of an independent audit in selling consulting services to audit clients.

These charges almost came to legal blows, but in the end no one wanted to tangle with a bunch of angry, rich accountants, especially when many of the plaintiffs did extensive business with the likes of Andersen and others. Thus, any remaining obstacles to leveraging the staid auditing business to build the potentially more lucrative computer consulting business were cleared away. This all took place half a decade ago.

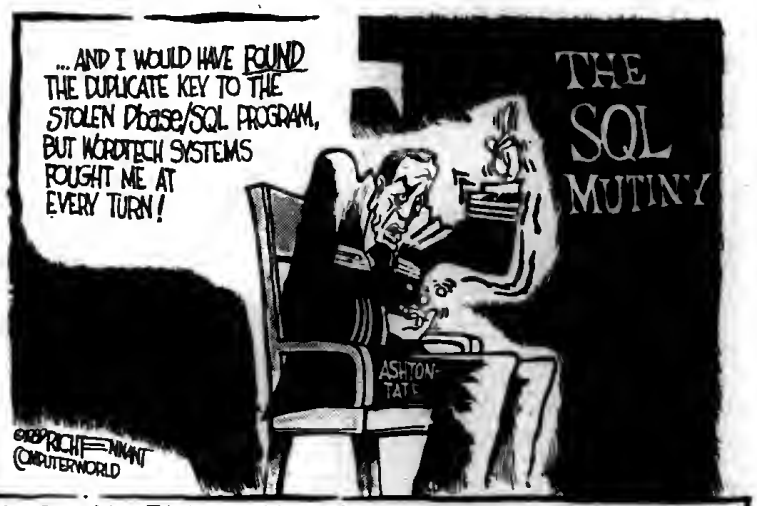
Yet for the most part, with the exception of Andersen, none of the big accounting firms had bitten off any significant piece of the computer consulting business, which in this country is a $90 billion-plus annual market. Not that they didn't try. They just couldn't compete effectively with the EDSs and Computer Science Corp.'s of the world.

All this seems destined to change as a result of major consolidations occurring in the accounting business [CW, July 10]. If the merger of Andersen and Price Waterhouse is finalized, the new company would represent more than $1.5 billion in consulting bookings, a figure likely to see double-digit growth in the coming years.

If you're an IS manager in need of consulting services (and who isn't?), you have to wonder what this emerging group will do to distinguish itself from the more established field of players.

According to a report in *The Wall Street Journal* last week, don't look to them for much imagination and creativity in the way they market themselves. That's because the firms are headed by accountants, the *Journal* reported, and accountants are accountants.

Beyond marketing, the real measure of the success these firms attain may be determined by what *future* alliances or mergers they engineer. The IS world has several unique characteristics, and this distinction has driven the recent acquisition of leading IS consultancies by big-systems integrators. The recent consolidations within the Big Eight will probably do more to stabilize the audit business than boost the computer consulting business.



News Item: Ashton-Tate threatens Wordtech Systems with lawsuit over nonexistent SQL product.

LETTERS TO THE EDITOR

Independent consultant caveat

"Selecting a winning broker" [CW, May 29] is a ludicrous invitation to break the law. Section 1706 of the Tax Reform Act of 1986, which is mentioned in the article, clearly states that "programmers, systems analysts, et al. when represented by third-party firms must be treated as employees for tax purposes . . ."

The IRS is currently conducting compliance reviews in order to enforce the law. Firms found paying "consultants" on 1099s are being assessed heavy penalties. In addition, consultants reclassified to employee status by the IRS must be provided with corrected W-2s for the year(s) under review even though they have previously filed a 1099-based return.

This letter is not a comment on the fairness of the law. It is a comment on *Computerworld's* judgment in selecting articles that coach people in flaunting the law.

It might be more helpful for you to run a series of in-depth articles exploring the 1706 topic from all sides. The status quo is widely misunderstood and Congress seems to like it that way. We believe the more knowledge, the better for all of us.

Robert J. Brown
President
Computer Dynamics, Inc. of California
Los Angeles

"Selecting a winning broker" suggested that anyone wishing to become an independent consultant seek out a broker who would be willing to treat the individual as an independent contractor.

Section 1706 provides specific guidelines to establish an individual's ability to qualify for independent contractor status. Your readers should know that it is not simply a matter of finding a broker willing to contract for their services — they must satisfy IRS qualifications to work as an independent contractor. An SS-8 form, available from the IRS, can be used to determine eligibility to seek work as an independent contractor. If eligible, the IRS will provide a letter of determination, which can be utilized by a broker or professional services firm to subcontract for services without traditional employee tax withholding.

It may be unsound to advise people seeking independent contractor status to seek out a broker who may not be operating within the laws and regulations established by Congress.

James P. Grouney
President
CPU, Inc.
Fairport, N.Y.

I take exception to "Selecting a winning broker." As the CEO of a $200,000/year professional services firm, I am concerned with the one-sided message your article conveys. It misadvises the independent contractor. The tests required by Section 1706 to defend independent contractor status are not to be manipulated as a tax hedge.

Section 1706 is the law and requires compliance. Independent contractors and/or clients are subject to recourse by the federal government if the requirements of Section 1706 are not met.

Robert J. Syuolski
Chairman and CEO
CAP Gemini America
New York

The right program

I truly enjoyed "All work and full pay bears fruit" [CW, June 26]. I just received my MBA from the Advanced Management Program at Michigan State University, which required the kind of commitment described in the article.

Typically, my study group and I spent 30 hours per week on schoolwork. This was in addition to my normal job as well as personal responsibilities. Your article recognized the commitment made by students who enroll in these types of programs. You must be a risk-taker and also a little bit crazy to give up two years of your life to complete these programs. Only the students enrolled in the program would understand the stress and pressure.

I can attest that the benefits far outweigh the sacrifice. The people in these types of programs and the course work are stimulating and challenging. You learn a great deal from the people studying in the program with you as well as from the instructors.

Thank you for highlighting the executive MBA programs in *Computerworld*. Keep up the good work in your fine publication.

Eric Yablonka
Manager
Information Services
William Beaumont Hospital
Troy, Mich.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

The risks and rewards of repository products

IBM WATCH

ROBERT P. TASKER

IBM is walking a fine line between opportunity and disaster in its efforts to meet the promise of a repository. The potential opportunity lies in being the first vendor to market a functional repository. User interest is exceptionally high because a properly implemented set of products will greatly improve the way in which systems are developed and maintained.

Disaster is also on the horizon because a repository family of products, by its very nature, will help move systems toward standardization and open architectures. Simply put, repository products will deliver a set of functional, standard interfaces. These interfaces will allow IS managers to closely integrate the most cost-effective set of tools available on the market into the application development environment. IBM would most probably fare very poorly in such a standardized environment, and therein lies the major strategic problem for John Akers.

Formally delayed at least twice, the first incantation of IBM's repository is now expected in October 1989, although further delays for sorting out the marketing issues are certainly possible.

Market dynamics aside, the sheer scope and technical complexity of the repository undertaking is proving a difficult hurdle, even for IBM. The repository must be compliant with the interfaces for the Systems Application Architecture (SAA) and Systems Managed Storage and the evolution of the Enterprise Systems Architecture with cooperative processing — and that's just within IBM.

Other standards will need to be addressed as well. In a catch-22 situation, the repository will require extension of some SAA interfaces that have not been fully defined yet; an example is expert system interfaces.

IS managers have been dealing with an infuriating lack of robust, portable, easy-to-use modeling tools to provide consistent data definitions. Current tools also do not integrate well with the later stages of the development process. Aware of this frustration, IBM is applying substantial resources to the concept of a repository despite the obstacles and inherent risks.

Other vendors such as Oracle Corp., Digital Equipment Corp. and Computer Corporation of America are working feverishly to preempt IBM by releasing repository their own products.

Despite the apparent urgency of the effort, IBM's repository will be a set of products introduced in phases over several years. The ultimate objective of the repository will be to allow transparent and authorized access to all data within a corporation, regardless of location and data type.

The first phase of IBM's repository services will likely be a layer of interfaces and enablers for controlling and integrating many development functions and attributes. This layer of control will sit over a relational database manager and will be much more than simply an expanded data dictionary.

Initial repository

The initial repository will be active and integrated and positioned for IBM's high-end 370 development environment. As such, products for the IMS (including the transaction manager) and DB2 database managers will be included in the initial offering, as well as interfaces for CICS and batch processes. Interfaces for OS/400 and OS/2 will be announced, and development of these products will continue independently of the 370 products.

Interfaces for IBM's computer-aided software engineering product, Cross System Product, will be announced for delivery at a later time, most likely in the late spring of 1990. A set of interface products for third-party products, referred to as "external source formats," will also be introduced at that time. With the advent of a Lego-type approach to non-IBM products, application developers will be able to establish standards within the development environment for the first time and truly begin to implement open systems. At that point, incompatibilities between products will be resolved at the interface level.

The repository is a critical tool set that carries the potential to totally recast computing as we know it today. The initial phase, when finally announced, will not deliver on that full potential but will set direction. Expect phased enhancements to deliver functionality over the next 24 to 36 months, which is most likely the time required for most users to adequately prepare their environments.

Tasker is vice-president of International Data Corp.'s Software Research Group based in Framingham, Mass.

Paying the high price for price

EFREM G. MALLACH

The question, "How important is price in your decision?" is a staple of most computer purchase surveys. Respondents never make that issue No. 1 or No. 2, but it always lands in the top five or six ranking. If surveys were baseball players, price would bat a solid .290.

What the surveys miss is *why* price has this top-five-but-not-No. 1 ranking. In years of helping computer users make purchase decisions, I've repeatedly seen that a given price difference can move from low to high importance in the decision process — depending on where it is relative to a decision maker's subjective frame of reference.

BOB DAHM

Why does the human mind work this way? Let's look at system price from the income statement point of view. In a typical manufacturing firm, IS costs are about 2% of revenue. Of this 2%, the largest cost is people. Next comes hardware, followed by software and assorted other costs such as supplies. Hardware is about 0.5% of revenue. The cash flow fluctuates from year to year, peaking when the corporate mainframe is upgraded, but the annual charge based on amortization tends to be remarkably consistent from one year to the next.

This 0.5% represents all the hardware in the firm. Any given decision affects only a fraction of these systems. Maybe it is mainframe replacement time. Maybe office automation is under discussion. Maybe it's time for new desktop micros. A major decision represents, in all likelihood, less than a fraction of 1% of revenue.

What are the differences between vendors' prices likely to be? Market pressures keep comparable systems within shouting distance of each other.

So price variations among vendors will be at most a fraction of 1% of corporate revenue. This isn't enough to get excited about, especially when compared with the value of choosing the right system.

In that case, why is price ever in the top ten — let alone the top five? Partly because price is a quantifiable item that survey respondents have been told they should care about. Nobody will own up to ignoring price in a business decision. But the innermost truth lies in the typical system purchase process. It often starts a situation this way:

IS Manager: "We ought to think about a new system for fripping our elbats."
Director of Elbat Fripping: "How much do you think it will cost?"
IS Manager: "Well, we really haven't looked at the user requirements or the load yet ..."
Director of Elbat Fripping: "That's okay. I just want a rough ballpark idea."
IS Manager: "In that case, probably around $600,000 for the equipment, plus two systems analysts for three months for . . ."
Director of Elbat Fripping: "$600,000 is reasonable. Write something up."

From that moment on, $600,000 is a magic number. In all likelihood, the manager didn't hear a word after the number was mentioned. Any system that costs up to $600,000 is fine.

If one comes in at $599,786 and another at $29.95, the IS manager has no reason to go for the lower price. In fact, he is motivated to choose the more expensive system: It enhances the manager's credibility by showing the original estimate to be right on target, justifies more IS staff and probably has more associated prestige.

However, what if the second system is *over* the magic number, say $623,000?

The vendor of the more expensive alternative might as well walk away. No matter that the $623,000 system has twice the disk capacity, three times the CPU speed, four times the available software and five times the local support. It's more than the magic number. The IS manager would have to go back to the Director of Elbat Fripping, hat in hand, and confess that the original $600,000 estimate was low. It doesn't matter that the estimate was only 4% low. IS wants more money — again. No IS manager wants to be in that position when there is a semiviable alternative.

IS managers aren't stupid. They leave breathing room for themselves. One who says "six hundred thou," probably thinks $450,000 will handle all contingencies. Moreover, a manager's idea of system prices usually dates back to the last similar procurement he saw. The same hardware capability has probably become 30% cheaper in the interim and will drop by another 15% before an RFP hits the mailroom.

The message for users is, don't get caught in this trap. This is, in part, a corporate culture issue. Some organizations are more open to frank discussions, and some create a more "cover-your-rear" climate. Managers must often answer the "how much?" question like this:

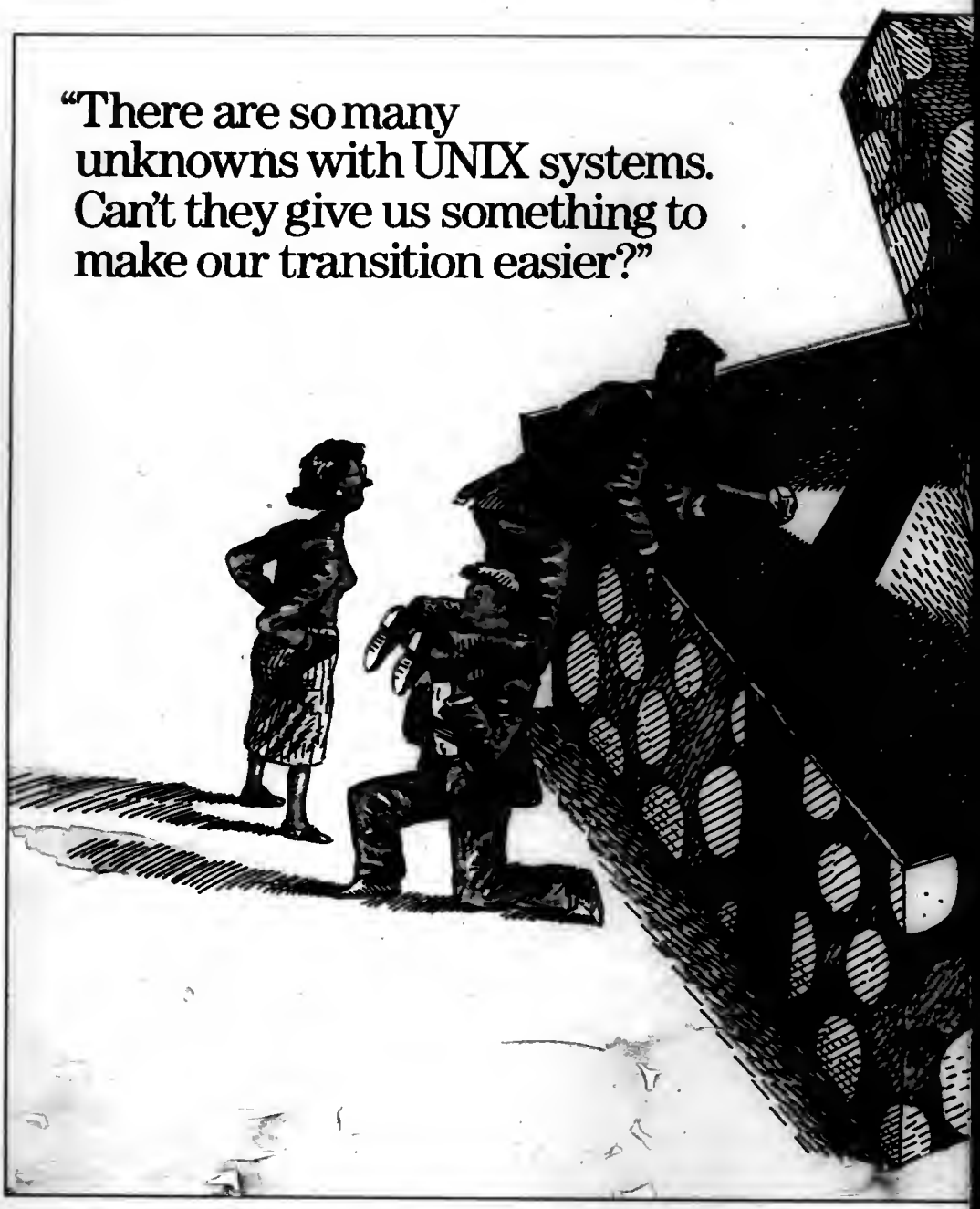
"It may be $2,000, it may be $2 million. At this point I just want to put a couple of systems analysts on it for three months so we can get a handle on the real number. Then I'll let you know."

This is not trying to be coy, not an attempt to keep information from users. It is a necessary response to the fact that *any* number within reason, once stated, takes on a life of its own.

The message for vendors is to recognize that users will, because of human nature, get caught in this trap no matter what I write here. Finding out a prospect's real limit can, where there are several legitimate approaches to a solution, help choose the best that has any hope of being accepted.

Also, realize that the high-score price gets on a survey scale and is essentially meaningless. It is vital to discover what effect price will have in a given situation and not base a marketing strategy on the assumption that the score of six is meaningful. Finally, remember that price is meaningless unless a product is a commodity.

Mallach is a faculty member at the University of Lowell in Lowell, Mass., and a consultant to users and vendors.



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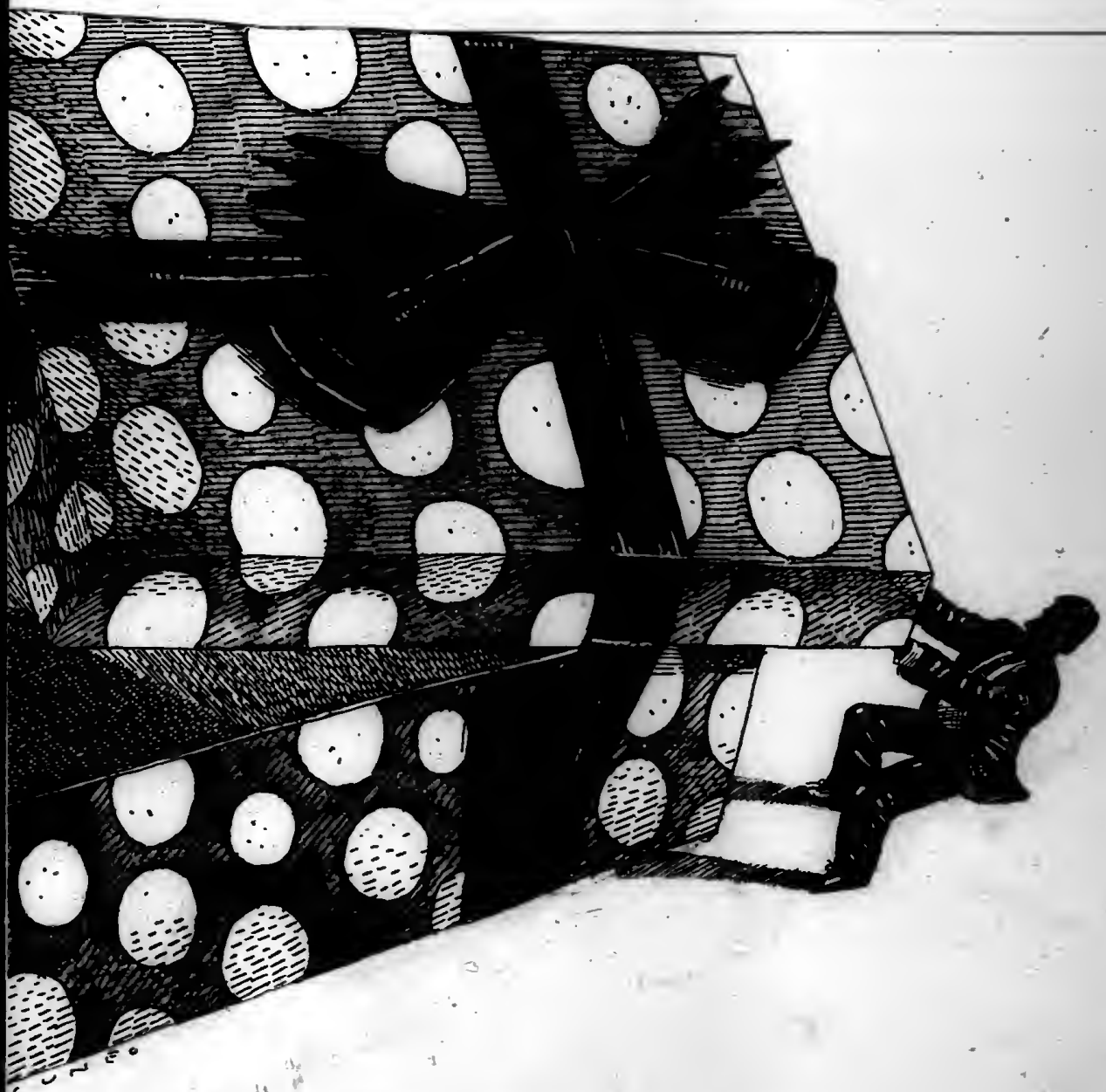

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HARD TALK

Rosemary Hamilton

Where's the beef? Just ask Olsen

There's one thing you can count on at a Digital Equipment Corp. press conference: Ken Olsen, chairman of the Maynard, Mass.-based company, will have a beef, and he won't be shy about telling you about it.

Last week, when DEC released a slew of hardware and software products, Olsen was true to tradition. This time, he complained that the press wanted to create a conflict between DEC's two product lines: the reduced instruction set computing (RISC)-based systems and the VAX-based line.

But to Olsen, the idea that these two product lines conflict with each other is nonsense. He insists that they complement each other and implied that you'd have to be crazy not to see the same thing.

Well, shame on the press and anyone else who doesn't see this complementary existence right off the bat.

But, with all due respect to Olsen, there is, in fact, a reason why some people might see a conflict after all.

How about the fact that they are two incompatible product lines? The RISC-based systems use a different microprocessor and run a different operating system than the VAX-based sys-

Continued on page 29

VSE not gone, but graduating

ANALYSIS

BY ROBERT MORAN
CW STAFF

Long associated with midrange IBM 370 hardware platforms such as the 4300 and 9370 families, IBM's DOS/VSE operating system will soon be graduating to the next tier in the mainframe world — the low end of the 3090 line under PR/SM.

Users can now choose from several scenarios, including running VSE natively under IBM's PR/SM; using both VSE and VM under the control of VM; or running both VM and VSE as equals under PR/SM partitions.

Pete Clark, systems programming and database and data communications administrator at Olan Mills, Inc. in Chattanooga, Tenn., said that his company plans to run VSE along with PR/SM on either a 3090 Model 180 or Model 200.

With VSE and PR/SM, which became available under VSE/SP Version 3.2 in December, Clark said that he will garner huge savings over the alternative of running VSE under VM/XA.

With PR/SM, Clark will only have to pay a one-time charge of approximately $64,000 for PR/SM, and he will not have to pay the monthly charge of nearly $5,000 for VM/XA.

Under PR/SM, VSE users, like MVS and VM users, can divide the processor into numerous entities or operating systems for one charge.

"For a VSE user that is VSE-based and VSE-oriented and doesn't have ties to VM, there is no reason to run VM in that environment," Clark said.

The availability of PR/SM is part of the revival of the VSE operating system, whose imminent demise observers had been predicting.

According to Bernd Robatzek, IBM's director of software systems in Boblingen, West Germany, VSE shares many affinities, including CICS and SQL, with the MVS operating system and should be viewed as one of IBM's strategic operating systems.

Indeed, Robatzek stated that within 18 months VSE will offer features normally found only in large mainframe-based operating environments — relief from virtual storage constraint with native-mode 31-bit addressing and dynamic reconnect and path select to direct access storage, which will hasten I/O access.

IBM's Robatzek *says VSE is a strategic operating system*

Continued on page 32

Bank's image system counting on IBM 380S

BY ROSEMARY HAMILTON
CW STAFF

TORONTO — The Royal Bank of Canada's systems and technology division in Toronto is planning an image processing project and until recently could not find the right mainframe for the job.

Then along came the IBM 3090 Model 380S.

The mainframe is a two-sided processor introduced by IBM earlier this year that offers more horsepower than the 200S or 300S but costs less than the 400S, which had been the next step up.

In addition, the 380S is the first 3090 to feature an asymmetrical capability that allows users to add expanded storage and channels in differing amounts on either side of the processing complex. Previously, a user was required to assemble equal amounts on each side. In some cases, that meant buying additional storage that was not needed just to keep the two sides balanced.

"The 380 just happened to fit," said John Wood, who heads up the systems and technology division at the Royal Bank. "It matched the work load we have."

This fall, Royal Bank, which currently runs several 3090s, will become one of the first users of the newest S model. The system will be generally available in November, but Wood said he is expecting to be in production mode with a 380S in October.

Wood said that the 200S did not have enough capacity, and the 400S, which has a base price of $9.8 million, was too expensive. The base price of the 380S is $7.9 million.

Wood said he saved an additional $250,000 by opting to bring in the new mainframe as an upgrade. The bank bought a 180S and will upgrade that to a 380S in the fall.

The plan is to split the 380S, with the 180S side running image applications and the 200S side serving the development staff.

The asymmetrical feature is an added bonus for Royal Bank, Wood said. His group can now set up the 380S mainframe with different amounts of storage and channels.

Wood said the image processing side, which will run the MVS/ESA operating system, will require more expanded storage than the development side. Initially, he expects to load 128M bytes of main memory and expanded storage on the image processing side, while installing the same amount of main memory on the development side but with only 64M bytes of expanded storage.

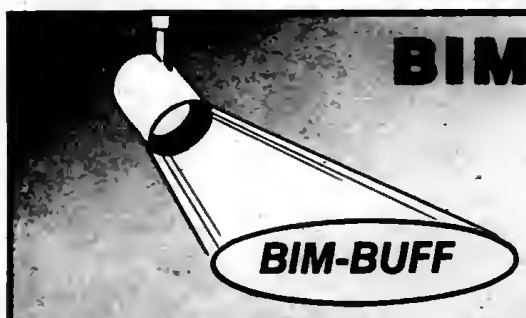
By not having to load the development side with 128M bytes of expanded storage, Wood is saving $145,000.

The 180S portion of the new system was installed last month. Wood's group is testing the Enterprise Systems Architecture (ESA) operating system and plans to move it to the 180S in August.

The group is now working with IBM on its final requirements for image applications, Wood said. He expects to initially run check processing and credit card processing applications on the new mainframe.

Inside

- Historic naval hospital shoots for high-tech bedside manner. Page 25.
- Mantis SQL support has new release on life. Page 25.
- DEC, AT&T eye operating system security. Page 28.



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Navy's hospital beds go on-line

ON SITE

BY JEAN S. BOZMAN
CW STAFF

SAN DIEGO — In the deep, dark days of World War II, this city was the launching point for the U.S. Navy's Pacific Fleet. The fleet's sick bay was a hospital that was fashioned like a Spanish church, high on a hill overlooking San Diego bay. Today, that old naval hospital, Balboa Hospital, stands empty. The new fleet hospital is a shiny, glass-sided complex with 450 beds — 150 of which are wired for real-time telemetry of patients' vital signs.

The changing of the guard came in 1988, when patients were transferred to the new facility adjoining the old hospital. However, the task of wiring bedsides for computer readouts is ongoing — part of a three-year, $7.9 million naval contract. Just 150 of the 250 planned bedside terminals are up and running, pending the development of additional applications software during the next six months.

The bedside terminals are designed to serve the patients with the most serious illnesses, according to Lt. Amy Suggs, a naval nurse who trained hundreds of doctors and nurses to use the bedside computers. "We use them only in specialty areas," Suggs said. "That's in intensive-care units, coronary-care units, neonatal units and the labor suites." The hospital is available to 425,000 naval personnel, their families and Navy veterans.

Monitors at the bedside, manufactured by Hewlett-Packard Co., digitize patient information and pass the data along to a fault-tolerant clinical-care system based on Sequent Computer Systems, Inc.'s Symmetry processors. The Symmetry machines run Dynix, Sequent's version of Unix.

The Patient Data Management System application software, developed by Clinicomp Intl. in San Diego, displays both real-time and historical patient data. "We acquire monitored data, including heart rate, respiration, blood pressure and temperatures," Suggs explained. Once monitored, the patients' data is stored in the system's 2G bytes of storage, where it can be retrieved for playback.

Applications software calculates how much medication a patient should get — based on the patient's weight — and maintains records on breathing, brain activity, medication and treatment history. "We needed a physiological monitoring system that would allow us to automate the charting of patients' data," said Commander Robert Wooldrige, project director for the clinical system. "If you have to [manually] chart 15 or more readouts every five minutes, you find you're running behind," he said. "Now, a single keystroke will download the new information into the patient's chart."

Automation of record keeping and physicians' paperwork was seen as key to the system's design, said Chris Haudenschild, president of Clinicomp, a 10-person medical systems software supplier. "People can make errors in the addition of fluids, especially at night, when it's dark in the units," he said. "The system eliminates the use of the handwritten chart. It collects all the clinical information electronically and can produce reports [on paper] later on."

Suggs said that the system, which was initially used in March 1988, required an initial adjustment by its users. "I would have to say that at first, the reaction was mixed to the new system," Suggs recalled. "Some people were very positive about it, and some fought it tooth and nail." Now that the hospital's bedside system is well-established, training requirements are minimal.

Several floors below the patient areas, in the hospital's computer room, two Sequent Symmetry fault-tolerant processors support the bedside system. Each Symmetry 27 unit has its own power supply, which allows each unit to shut down gracefully in the event of a power outage, Haudenschild said. The use of multiple parallel microprocessors, combined with 80M bytes of main memory per system, means that 250 users can log on without slowing down the system, he said.

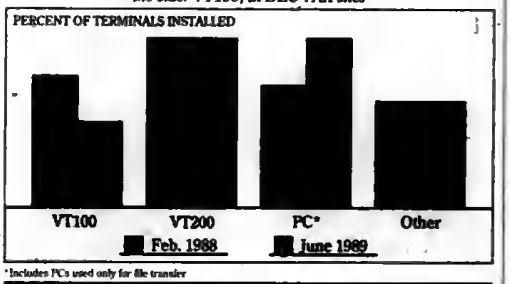
The two systems share a link to keep the data in sync. All patients' data is stored in the computer room — not in the bedside terminal.

Security of the system was also a key design consideration, Haudenschild said. There are hundreds of physicians, nurses and hospital corpsmen — any one of them able to make changes on patients' records. Personal identifications and passwords were issued to limit the authority to make changes.

Data View

VAX terminals

PCs are gaining ground on traditional terminals, particularly the older VT100, at DEC VAX sites



*Includes PCs used only for file transfer

SOURCE: COMPUTER INTELLIGENCE

CW CHART: DOREEN DAHLE

Cincom renews Mantis SQL Support

BY STANLEY GIBSON
CW STAFF

Cincom Systems, Inc. recently capped several enhancements to its Mantis fourth-generation language (4GL) product with a new release of Mantis SQL Support for DB2.

Within the last month, Cincom has released Entity Transformers — which provides users with the ability to reuse modules of code — as well as Mantis for the PC [CW, July 10]. Mantis SQL support includes both Entity Transformers and Mantis for the PC, but it also adds static application execution, which reportedly allows the application to be processed efficiently in IBM DB2 production environments.

The previous version of Mantis SQL Support for DB2 included only dynamic application execution, which is intended to streamline development and testing. It includes overhead, however, resulting in slower performance than the static execution environment.

Robin Abbott, manager of database administration for GE Plastics in Parkersburg, W. Va., was attracted to the product because he required SQL support for his DB2 databases. A long-time Mantis user, Abbott at first tried IBM's Cross-System Product (CSP) because of its SQL support, which Mantis lacked before Mantis SQL Support for DB2 Version 1.1.

"We tried CSP. It was not a success," Abbott said, calling CSP cumbersome and difficult to work with. He noted that CSP produces source code, screens, records and other components, all of which have to be combined by an administrator to be made into an application, a laborious step.

"You've got to run your business today. Maybe CSP will be the No. 1 fourth-generation language someday. It isn't that today, and it has a long way to go," Abbott said.

Abbott said he required both dynamic and static execution. A beta-test user for both versions of SQL Support for DB2, Abbott wrote his applications in dynamic mode in anticipation of the arrival of the static mode with Release 2.1.

"If it weren't for Mantis, Cincom would be in big trouble," commented Shaku Atre, a part-

Continued on page 29

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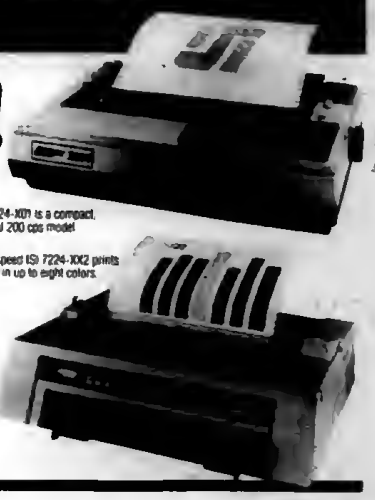

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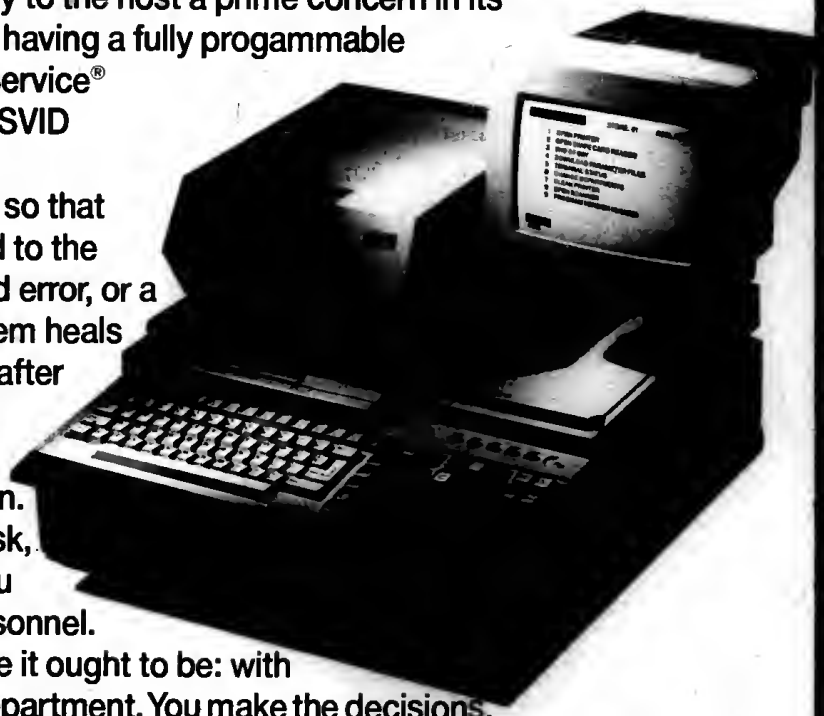

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DEC, AT&T tackle security

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Digital Equipment Corp. and AT&T used the recent Armed Forces Communications and Electronics Association conference to outline efforts to beef up the security of their operating systems.

DEC unveiled a security-enhanced version of its VMS operating system that is designed to meet the B1 security rating of the government's National Computer Security Center (NCSC). Under the center's classification system, a B1 rating requires mandatory access controls for multilevel security.

DEC said VMS/SES Version 5.1 provides B1-level security for all VAX processors, including DEC's new family of desktop workstations.

Bundled with the operating system is a security consulting service, in which a DEC consultant makes an assessment of existing security operations and provides security training for systems managers and users.

Dana Lajoie, technical director for DEC's Federal Systems Group, also confirmed that DEC is developing an operating system kernel aimed at the highest NCSC rating, A1, and intends to place the A1 kernel in field tests this month. A1 systems require a protected kernel that is mathematically proven to be tamperproof.

William J. Leighton III, the head of the security systems engineering department at AT&T Bell Laboratories in Whippany, N.J., said the NCSC standard for classifying trusted systems — the so-called Orange Book — "has been the single most important factor in getting people to focus on security."

During a conference session on viruses and other security problems, Leighton said the 1983 Orange Book was a landmark document because it established criteria for evaluating the security of any system [CW, Sept. 17, 1984].

Unix System V strengthened

Leighton described AT&T's efforts to strengthen the security of Unix System V, including the currently available System V/MLS, a kernel add-on product that provides multilevel security with mandatory access controls. Having become a standard for the U.S. Air Force and the Swedish Defense Ministry, it is now under NCSC evaluation for a B1 rating, he said.

The MLS product will be replaced by Unix System V, Release 4.1 in 1990, Leighton said. Instead of adding onto the Unix kernel, Release 4.1 is a complete restructuring of the System V kernel that incorporates security features within the kernel. It will be targeted for a B2 rating, he said.

In another security announcement at the conference, DEC unveiled Transient Electromagnetic Pulse Emanations Standard, or Tempest, versions of 10 members of the VAX product family, including the Vaxstation 3100, starting at $12,900; the Microvax 3600, priced at $90,000; and the Microvax 3800, priced at $95,000. Tempest products are shielded to prevent accidental emissions of sensitive information.

C++ design tool unveiled

BY AMY CORTESE
CW STAFF

MOUNTAIN VIEW, Calif. — Parcplace Systems, Inc. recently unveiled a software development system that promises to ease design and coding of C++ programs.

Objectworks C++ is one of the first integrated set of tools to assist developers in creating applications using Release 2.0 of the C++ Language System, AT&T's object-oriented adaptation of the C language.

Currently, programmers cannot graphically view the structure of the programs they are developing in C++, according to Ted Goldstein, manager of new environments at Mountain View, Calif.-based Parcplace. The Objectworks development system provides a browse feature that allows programmers to graphically view the class hierarchy and file structure of application code.

Graphical interface to Unix

Objectworks also provides a graphical interface to the Unix operating system that simplifies the management of files and directories.

Additionally, an incremental compiler and a source-level debugger let developers interact with the execution state of an application, ensuring identical behavior of programs during the development process and at run time.

The package, priced at $2,495 for the Sun-3 workstation, is slated for late August availability, with other platforms to follow.

Objectworks for C++ joins Parcplace's Objectworks for Smalltalk-80, a similar development system for the Smalltalk object-oriented language. Parcplace's founders were part of the team at the Xerox Palo Alto Research Center that developed Smalltalk.

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HARD BITS

Cygnet signs disk-drive deal

Cygnet Systems, Inc. signed a deal with Toshiba America Information Systems that will allow it to sell the Toshiba optical disk drives in its storage jukebox product.

Cygnet is currently selling the line of jukeboxes to resellers and systems integrators in the U.S. The Toshiba product is a write-once optical disk drive that is capable of supporting up to 22.5G bytes of data.

Storage Technology Corp. has said that it is generating plans to develop and manufacture a new page printer in conjunction with Kentek Information Systems, Inc. The nonimpact printer, expected to perform in the 20- to 60-page per minute range, is slated to be targeted at IBM and non-IBM customers.

Meanwhile, Storage Tek announced it will sell a new printer interface adapter for its current high-speed printer offering. The adapter is manufactured by Spur Products Corp., and Storage Tek signed a multiyear deal with that company for sales and service of the offering.

The product will work with both the 5000E series printer subsystem and the 6100 laser printer subsystem. The adapter, which Storage Tek plans to sell for $9,950, will link the Storage Tek printers to a variety of systems, including the IBM midrange line as well as a wide variety of equipment from such vendors as Unisys Corp., Digital Equipment Corp. and Wang Laboratories, Inc.

DDC Pertec and California Peripherals Corp. began selling into the IBM 3480-class tape cartridge market. Although the two companies will compete with each other, they also announced that they had worked together in establishing the ½-in. cartridge format with the Working Group for Half-Inch Tape Cartridge Drive Compatibility. The two claim that their drives will therefore be interchangeable.

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CONTINUED FROM PAGE 25

ner at Atre/Computer Assistance in Rye, N.Y. She pointed out that competing 4GLs, such as Software AG of North America, Inc.'s Natural and Computer Associates International, Inc.'s Ideal, are usually used with the relational databases the vendors offer, Adabas and Datacom DB, respectively.

Mantis, because it was developed separately from Supra, is more often used separately from it, Atre pointed out. Abbott does not use Supra but had previously developed applications under Cincom's Total DBMS and still has some applications that use it.

Abbott said that although he feels some insecurity about using a DBMS from a third party, he feels much less so about using a development tool from an independent vendor. While a user becomes wedded to a DBMS, and hence is at risk if the DBMS vendor should falter, a user is much less dependent on the vendor of a development tool, Abbott said.

GE Plastics acquired Abbott's department from Borg Warner Corp. GE Plastics uses Cullinet Software, Inc. IDMS, and Abbott said he can see the opportunity to access IDMS and DB2 databases from the same applications, a capability offered in Mantis.

Mantis SQL for DB2 includes the ability to access IMS and DB2 files transparently from the same application under the IMS/DC teleprocessing monitor.

Hamilton

CONTINUED FROM PAGE 23

tems. You can't take a VMS-based application and run it on a RISC system.

DEC last week explained this complementary environment by targeting the systems at different needs. The RISC-based systems are for people most interested in very fast processors and low cost. The VAX-based systems are for users who need the rich VMS environment and require more commercial IS facilities, such as security.

OK. That's a fairly good explanation, but it's still a little too simple. My guess is that most IS managers don't have it that easy when deciding which system to purchase. What about the IS guy who has these traditional data processing requirements and is also getting lots of pressure from above to buy the lowest cost system he can find? In other words, there are probably plenty of users who have requirements that RISC-based systems and the VAX systems offer.

Furthermore, DEC isn't sticking with its simple distinction for the RISC and VAX lines. At the press conference last week, it featured one RISC system as a data center computer. Well, what's that? The data center description implies a traditional IS environment that DEC said belonged to the VAX lines. It also spent a good deal of time highlighting the new low prices of the VAX line. Isn't pricing supposed to be a key RISC factor?

Maybe DEC should spend a little more time explaining this complementary relationship rather than complaining that the industry doesn't understand it.

Hamilton is *Computerworld's* senior editor, hardware.

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MOTOROLA

SOFT NOTES

Teradata to develop gateway

Relational Technology, Inc. and **Teradata Corp.** said recently they will develop and sell a gateway that allows Relational's Ingres database tools to be used with Teradata's DBC/1012 Data Base Computer. The gateway will be developed and marketed by Teradata.

Relational also announced a joint-development project with **Sequent Computer Systems, Inc.** Parallel Database Query will seek to produce a version of Ingres to process database queries to be spread over the multiple processors of Sequent's Symmetry system.

Interactive Development Environments, Inc. (IDE) in San Francisco and **Engineering Software, Inc.** in Austin, Texas, said they will integrate IDE's Software Through Pictures computer-aided software engineering environment with SES/workbench, a design evaluation and simulation environment.

Graphic models in SES/workbench will be derived directly from Software Through Pictures diagrams used for the design of real-time software, according to IDE.

Ross Systems, Inc. in Palo Alto, Calif., said it completed the acquisition of **Cardinal Data Corp.** in Needham Heights, Mass. Ross makes financial management and accounting software for Digital Equipment Corp. VAX systems. Cardinal offered distribution software for use in sales-order processing, sales analysis and inventory control.

Convergent Solutions, Inc. in Laurence Harbor, N.J., signed an agreement with **Informix Software, Inc.** that gives CSI sole distribution rights to sell Informix's line of database products into the CTOS and BTOS market. CTOS is a multiuser, multitasking microcomputer operating system developed by Convergent Technologies, Inc.; it is sold as BTOS by Unisys Corp.

Unisys Corp. said it formed a marketing alliance with **Lodgistix, Inc.** in Wichita, Kan., a supplier of microcomputer-based property management systems. Under the agreement, Lodgistix is a value-added reseller of the Unisys Personal Workstation 2 line, offering those personal computers with Lodgistix' MS-DOS-based property management system and sales and catering system.

The companies plan to interface these systems to the Unisys Hotel Revenue Enhancement software, a Unix-based yield management system.

Solbourne Computer, Inc. in Longmont, Colo., and **Daisy/Cadnetix, Inc.** in Mountain View, Calif., signed an agreement under which Daisy/Cadnetix will license its electronic design automation software for use on Solbourne systems. Daisy/Cadnetix is also known as Daxix, Inc. Solbourne workstations are compatible with Sun Microsystems, Inc.'s Scalable Processor Architecture.

VSE

CONTINUED FROM PAGE 23

PR/SM may not even be a necessity for running VSE on the 3090. "On the uniprocessor level, there is very little technical difference between a 3083 and a 3090," Clark said. "On a technical level, there is no reason to believe that VSE will not run without PR/SM."

Clark is no stranger to running VSE on large IBM mainframes. Although IBM never announced the capability and consequently does not support it, Clark said his company runs VSE on two 3083 mainframes without the support of the VM operating system.

Other VM and VSE users, according to Clark, intend to get PR/SM and run VM in one of the partitions and run VSE in others. With IBM's recently announced SQL guest sharing, for example, databases can reside in VM, and users can communicate with VSE through VM.

Leaning toward VM/XA

William Dodge, systems programming team leader at the National Wildlife Federation in Vienna, Va., currently runs two IBM 4381s.

He said by this time next year the shop will have an IBM 3090 but will still be running VSE. Dodge has not decided whether he will run VSE under PR/SM or under VM/XA, but he is leaning toward VM/XA.

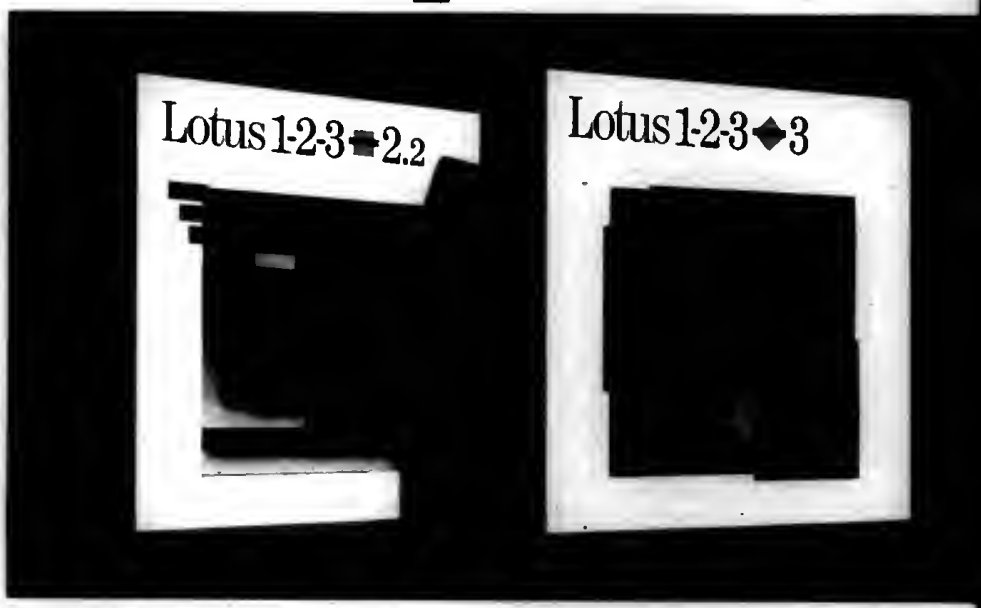
That strategy, he said, is designed to ward off conversion to the MVS operating system. As part of the strategy, Dodge will eschew DB2, which he said at one time would have been the decisive factor in converting him into the MVS fold.

As an alternative, Dodge will run VSE SQL/DS. "When we interviewed our users, DB2 interest waned because of costs," Dodge said. "SQL/DS will be more viable as an introduction to relational databases."

Although Dodge is trying to forestall it, he said he believes it inevitable to migrate to MVS.

In the meantime, he said he feels better about his current status. "IBM now has a gentler attitude," Dodge said. "I prefer to be viewed as a user of an entry-level operating system, rather than of a dinosaur."

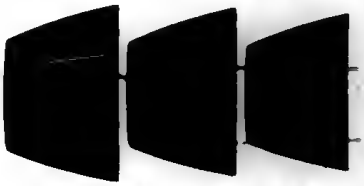
Lotus introduces so
sleep better at ni



Spreadsheets are like lots of things in life, one size doesn't necessarily fit all.

Different users work with different types of computers. They work on different tasks. And they have different requirements.

That's why Lotus® has created two exciting new spreadsheets: 1-2-3® Release 3 and 2.2. Each designed specifically to maximize performance on different types of PCs and work together across different types of PCs.



Release 3's 3D design lets you work with multiple sheets and files simultaneously.

Release 3 is nothing short of a breakthrough in software technology. Its new, true three dimensional design lets you organize, analyze and navigate your way through spreadsheet applications with incredible speed, power and ease.

What is it that makes Lotus's true 3D different?

© 1989 Lotus Development Corporation. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. OS/2 is a registered trademark of IBM, Inc. Macintosh is a registered trademark of Apple Computer Inc. 1-2-3 Release 3 runs under DOS or OS/2.

NEW PRODUCTS — SYSTEMS

Processors

A multiuser business computer designed to accommodate as many as 32 users has been announced by Point 4 Data Corp.

The Mark 6S series reportedly operates at a 160-nsec. instruction execution cycle time and includes a 32-bit bus that operates at 33.3M byte/sec. The system provides support for up to 128K bytes of on-board memory and functions in the Iris proprietary operating environment.

A basic unit includes 2M bytes of extended memory, a 170M-byte enhanced small device interface Winchester drive, a 150M-byte ¼-in. cartridge streamer and a multiplexer with 16 workstation/printer ports. The unit costs $22,995.

Point 4 Data
15442 Del Amo Ave.
Tustin, Calif. 92680
714-259-0777

A VME-bus single-board computer has been introduced by Themis Computers.

Designated the TSVME-123, the 16-MHz Motorola, Inc. 68020-based board is said to be customizable and reportedly can incorporate from 256K to 512K bytes of local zero-wait-state random-access memory. The unit provides 1M byte of shared memory and a custom application module interconnect with two access ports to shared memory, the company said. A debugging monitor is also included with the board. The TSVME-123 sells for $3,695.

Themis Computers
6644 Owens Drive
Pleasanton, Calif. 94566
415-734-0870

Data storage

A family of 5¼-in. hard drive systems for AT&T's 3B computer series is now available from East Coast Computer Systems.

The drives offer an average seek time of 14½ msec and can be purchased with either small computer systems or enhanced small device interfaces, the vendor said. The storage systems feature eight disks per drive and range in capacity from 72M to 600M bytes. As much as 2.4G bytes of storage can be configured with multidrive systems in a single cabinet, the vendor said. Pricing ranges from $5,995 to $54,000, and all units come with a standard one-year warranty.

East Coast Computer Systems
1 Sheila Drive, Bldg. 6A
Tinton Falls, N.J. 07724
800-322-7462

Distributed Logic Corp. (Dilog) has introduced two small computer system interface (SCSI) differential host adapters designed to connect multiple disk and tape drives to Digital Equipment Corp. Microvax II, Micro PDP-11 or LSI-11 Q-bus-based computer systems.

The SQ716A SCSI Disk Host Adapter permits connection of as many as seven disk drives to the Q-bus systems, while the SQ713A SCSI Tape Host Adapter allows connection of up to four tape drives or tape emulation devices, the company said. Both of the dual-height boards permit cable lengths of up to 80 feet and are priced at $1,675 each.

Dilog
1555 S. Sinclair St.
Anaheim, Calif. 92806
714-937-5700

Clearpoint Research Corp. has announced its DSB series of disk controllers and disk storage subsystems for Digital Equipment Corp. VAX 8000 series and VAX 6000 series computers.

The Clearpoint DSB disk controller reportedly resides directly on the VAXBI I/O bus and offers a peak transfer rate of 4M byte/sec. It supports as many as seven disk devices and occupies a single slot, the company said. The DSB subsystem offers 1G byte of formatted capacity and is available in several configurations. Pricing starts at $22,500 for a single-unit, rack-mountable version with one controller and one drive.

Clearpoint Research
99 S. St.
Hopkinton, Mass. 01748
508-435-2000

Power supplies

Unisys Corp. has expanded its line with three power peripherals for minicomputer and mainframe systems.

According to the vendor, the Power Peripheral 4000 system protects the Unisys 2200/600 family of mainframe computers from input power irregularities. The cost varies with system configuration, but can range from $70,000 to $80,000 for an average-size system.

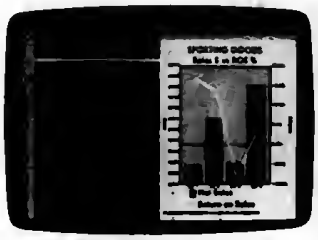
The UP900 series reportedly has a customized intelligent communications interface for the Unisys U6000 series minicomputer that permits unattended operation and a system-controlled shutdown in case of power failure. The UP908 version is priced at approximately $1,200, while the UP912 costs approximately $1,500.

Designed for minicomputers and small- and medium-size mainframe systems whose total power requirements range from 2kVA to 15kVA, the UP1700 ranges in price from $3,900 to $11,300.

Unisys
P.O. Box 500
Blue Bell, Pa. 19424-0001
215-542-2240

mething to help you ght. Fitted sheets.

Well, other spreadsheets provide two axes for you to work with: rows (height) and columns (width). But Release 3 gives you a third axis (depth). So you can perform operations using any spreadsheet function *through* up to 256 worksheets simultaneously.



Release 3's HotView graph window dynamically links your worksheet and related graph.

Equally impressive is Release 3's presentation quality output and its selection of advanced analytical graphics. And its Data External command lets you bring data from external databases directly into your spreadsheet without leaving 1-2-3.

You can also create a wealth of customized applications from simple forms to sophisticated turnkey systems using the new Lotus Add-In Toolkit for Release 3.

Release 3 is available now for DOS or OS/2® users and is the one product designed to take full advantage of the 1 Mb memory and processor that is standard on today's 286 and 386-based PCs.

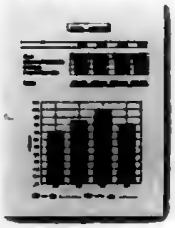
We've also created a new version of 1-2-3 for people who work on all types of PCs in a 640K DOS environment.

The soon-to-be-released 1-2-3 2.2 is designed to maximize the memory of those PCs. Release 2.2 provides extraordinary speed as well as presentation quality output with Allways built-in. And Release 2.2 offers improved analytical power in the way of spreadsheet linking, undo and minimal recalc.

Plus, hundreds of add-in and companion products that work with the 1-2-3 you're using now will work with Release 2.2.

1-2-3 2.2 and 3 provide the highest compatibility with your present 1-2-3 files, macros, applications and with each other. The new 1-2-3 family offers full networking capabilities and because the new products use the familiar 1-2-3 menu, it protects your investment in training and support.

Lotus plans to maximize your investment in the future by introducing 1-2-3 for mainframes, workstations, OS/2 Presentation Manager and Macintosh.®



Release 2.2 offers presentation quality output and extraordinary speed.

Offering your company's computer users maximum performance on their respective PCs is a big part of your job. Seeing that it all works together in harmony is a big part of our job.

And that should help you get a good night's sleep.

The New Lotus 1-2-3
The spreadsheet of choice

NEW PRODUCTS — SOFTWARE

Database management systems

Reltech Products, Inc. has announced two IBM Systems Application Architecture (SAA)-compliant DB2-based tools.

Both tools are said to be components of Reltech's DB Excel, a mainframe-based repository tool set that lets users define and manage their corporate data model. Release 1.0 of the DB Excel Plan Manager reportedly allows DB2 users to define and maintain application plans across multiple DB2 subsystems. Release 2.1 of the DB Excel DDL Manager supports data definition and record layout generation for DB2 Versions 1.3 and 2.1, IMS, PL/1 and Cobol.

An extensibility option is available with both tools. A single mainframe CPU license for Plan Manager costs $19,000 without extensibility and $29,000 with it. The license for DDL Manager is $30,000 without extensibility and $40,000 with it.

Reltech Products
Suite 5700
Flint Hill Four
3211 Jermantown Road
Fairfax, Va. 22030
800-333-4899

Intelligent Business Systems, Inc. has introduced an information retrieval and presentation system that permits untrained business professionals to issue queries against Oracle Corp.'s databases, the company said.

According to IBS, Easytalk permits the user to request the required information using conversational English. The software is targeted for insurance company sales and marketing analysts, manufacturing equipment service tracking, pharmaceutical firms and other industries. Pricing ranges from $3,600 to $141,000, depending on system configuration and number of users.

Intelligent Business Systems
185 Plaine Road
Milford, Conn. 06460
800-733-EASY

Servio Logic Development Corp. has announced an object-oriented database management system for use in the IBM RT workstation AIX operating environment.

Gemstone is implemented in C, and all operating system dependencies are isolated to a small number of modules, the vendor said. The product reportedly functions using the client/server software architecture and includes an object-oriented programming language for data definition and manipulation. Prices start at $22,000 for a one- to four-user license.

Servio Logic Development
Suite 100
15220 N.W. Greenbrier Pkwy.
Beaverton, Ore. 97006
503-629-8383

Development tools

BBN Advanced Computers, Inc., a subsidiary of Bolt Beranek and Newman, Inc., has announced an integrated programming environment for multiprocessing applications.

The X Tools for Runtime Analysis (Xtra) is reportedly available on BBN's Butterfly GP 1000 system, using X Window System multiple windows, mouse-driven inputs and pop-up menus. The Totalview source-level multiprocess debugger, part of the Xtra tool set, allows programmers to observe the effects of many processes running simultaneously.

Available immediately, the Totalview debugger is priced at $5,000.

BBN Advanced Computers
10 Fawcett St.
Cambridge, Mass. 02238
617-873-6000

A software tool for adding Help systems to applications and software packages is now available from Computer Information by Design, Inc.

Called Help on the Side, the program provides the ability to add Help windows to applications for either personal computers or mainframe systems, the vendor said. The package can be used by nontechnical PC personnel and costs $99.

Computer Information by Design
Suite 750 LB 44
15301 Dallas Pkwy.
Dallas, Texas 75248
214-386-4687

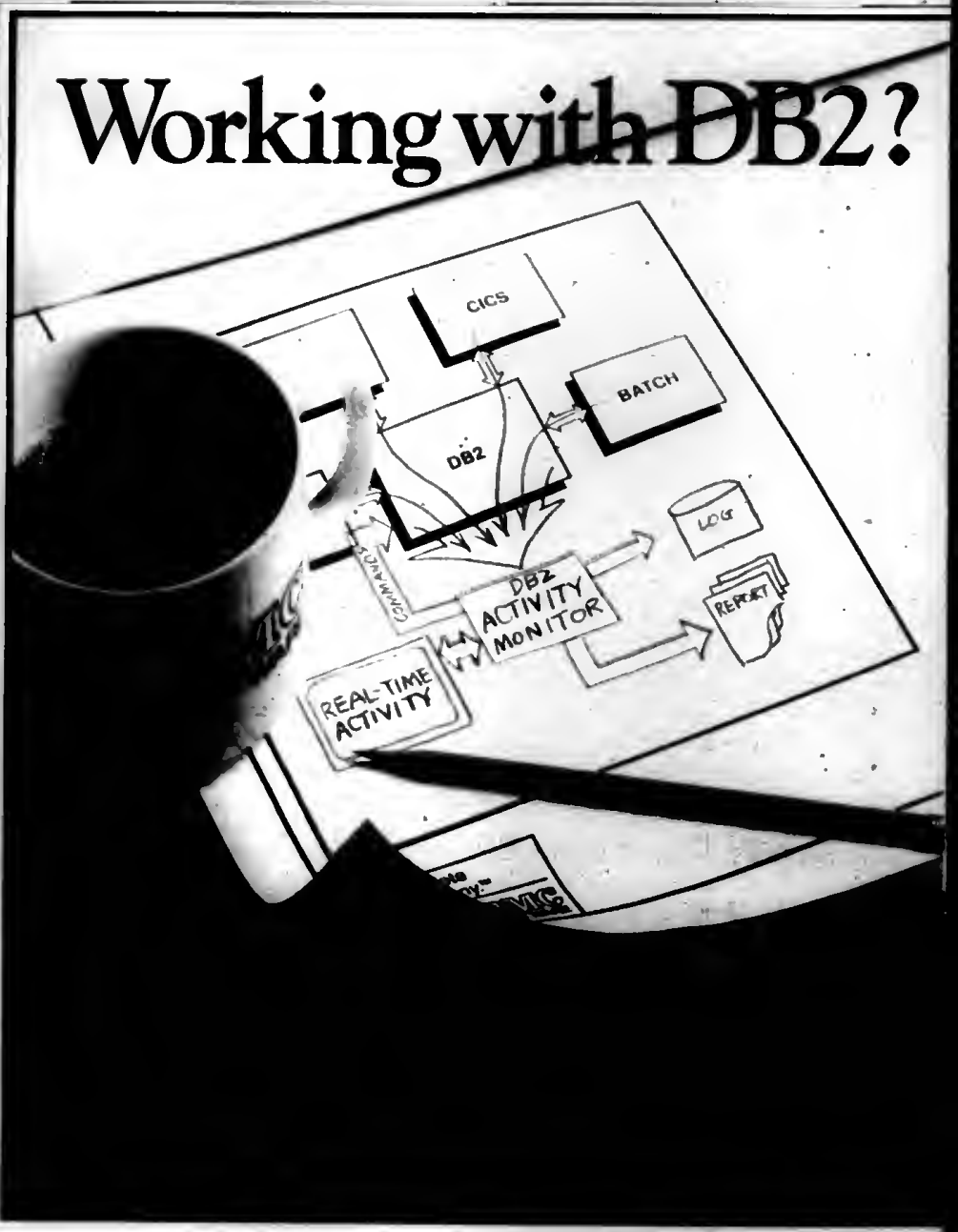
Aldon Computer Group has announced the availability of the S/Compare-Hamonizer Release 5.2 software system for Hewlett-Packard Co.'s HP 3000 computer systems.

The product simplifies the integration of in-house changes into new releases of packaged or distributed software, the vendor said. The latest version reportedly identifies the changes made locally as well as the changes made by the vendor and integrates both into a single composite output file. The company is offering a free trial copy of the software to interested users.

Aldon Computer Group
Suite 500
428 13th St.
Oakland, Calif. 94612
800-825-5858

Kisco Information Systems has announced a programmer productivity tool for IBM System/36 midrange computers.

The Report File Utility II (RFU II)



programs an application generator based on IBM's Data File Utility and translates any DFU program into a usable RPG II program, according to the vendor. The product reportedly can create on-line interactive screen update programs, screen browse programs and report programs.

The unit is priced at $450.

Kisco Information Systems
Suite 3E
120 Beverly St.
Mt. Kisco, N.Y. 10549
914-241-7233

Applications packages

Ross Systems, Inc. has announced an accounting system reportedly designed to meet the requirements of government agencies and not-for-profit organizations.

The Encumbrance Accounting system is said to be a specialized extension of Ross' Renaissance Series, accounting applications and tools that provide integration of Ross and third-party Digital Equipment Corp. VAX applications into a single environment. According to Ross, the Encumbrance system allows users to maintain control over funds allocations and transactions before they occur.

Available now, pricing starts at $10,000.

Ross Systems
1860 Embarcadero Road
Palo Alto, Calif. 94303
415-856-1100

Digital Equipment Corp. has introduced Version 4.0 of its Vaxeln real-time application software.

This release reportedly offers Decwindows support and enables VAX computers with workstation-type monitors (including Vaxstation systems) to display multiple screens simultaneously in windows, the vendor said. The Vaxeln real-time application software is typically used in process control, medical monitoring and aerospace simulation environments.

Vaxeln Version 4.0 software is licensed from $1,071 to $25,833 for the basic development tool kit, depending on processor.

DEC
146 Main St.
Maynard, Mass. 01754
800-344-4825

A trading system software package for mortgage- and asset-backed securities has been announced by Warrington Financial Systems, Inc. (WFS).

The Tradetrac/ABS system was designed to be compatible with the reporting formats of the Mortgage-Backed Securities Clearing Corp. (MBSCC), while simultaneously processing and tracking the principal and interest payments involved in such securities, the vendor said. The software runs on IBM 4300 and 3090 mainframes, as well as IBM 9370 departmental computers.

Tradetrac/ABS is also available on a time-sharing basis through the WFS service bureau. Licensing starts at $250,000.

WFS
101 Main St.
Cambridge, Mass. 02142
617-499-2000

GSI Transcomm has introduced Version 6.4 of the Tolas software system for distribution and financial management.

The integrated system reportedly consists of 15 customized modules for managing distribution, logistics, sales, inventory and financial functions in a Digital Equipment Corp. VAX environment. The latest version includes an enhanced General Ledger module with international tax codes and accounting practices, according to the vendor.

A complete version of Tolas 6.4 ranges in price from $60,000 to $400,000, depending on VAX system size.

GSI Transcomm
1380 Old Freeport Road
Pittsburgh, Pa. 15238
412-963-6770

Utilities

Software that reportedly automates the control and processing of all print queues, batch queues and print forms in a Digital Equipment Corp. VAX environment has been announced by Data Center Software, Inc.

Queman — The VAX Queman Management Utility — can reportedly be used with All-In-1 and several other word processing and office automation packages. The product is priced from $1,295 to $3,995, depending on CPU, and both site and corporate licenses are available, according to the vendor.

Data Center Software
70 Herrick St.
Beverly, Mass. 01915
508-922-9037

IBS Corp. has announced software designed for CICS 3270 data compression.

The CICS Quick-Talk Optimizer improves on-line response time with outbound and inbound 3270 data compression, the company said. The product reportedly leverages new MVS/XA and Enterprise Systems Architecture memory techniques and provides compression rates of up to 95%.

An outline data stream trace function is also included for scanning buffers to identify and explain any errors sent to 3270-type devices.

Pricing ranges from $10,000 to $18,000 when purchased with the Conference and Help Desk Automation tools.

IBS
Suite 700
4660 La Jolla Village Drive
San Diego, Calif. 92122
619-452-6045

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DB2 ACTIVITY MONITOR Gives You Complete Performance Data

DB2 ACTIVITY MONITOR provides more functionality than any other DB2 monitor currently available. Because BMC has worked extensively with DB2, developing a complete line of DB2 products, we know what you need to keep your system running efficiently. We used that knowledge to develop DB2 ACTIVITY MONITOR, making it the most complete source of information available for people who work with DB2.

CURRENT WORKLOAD screen. Performance data summary for DB2 transactions, grouped by connection type. Transactions not performing at peak efficiency can be selected for more detail.

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- Supplies DB2 Console function.
- Conserves resources by providing control of Trace function.
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- Displays increasingly detailed information with ZOOM function.

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CW

Introducing The Wyse Networker. It delivers all the power and performance of a 12.5MHz 286 PC. With all the styling and ergonomics of a Wyse terminal.

And while The Networker puts PC capabilities on user's desks, it provides MIS management with data and software security. Users access disk storage over the network. There's no local storage — no removable disks.

The Wyse Networker fits comfortably on less than a square foot of desk space. Yet it comes loaded with a full megabyte of RAM and built-in VGA. Plus the flexibility to work with virtually any network, from 3Com and Novell to IBM Token Ring and Ethernet. Because it's modular, The Networker will adapt readily to other network environments, as well.

The Networker is also part of SystemWyse.™ So it links easily with powerful Wyse 286 or 386 file servers to create network solutions with compatibility and connectivity built in.

The all new Wyse Networker. Only a company that's a leader in both personal computers and computer terminals could come up with a product like it. Which is why Wyse Technology is the company that did. 1-800-GET-WYSE.

Wyse® is a registered trademark of Wyse Technology, Inc. SystemWyse™ is a trademark of Wyse Technology. Other trademarks/owners: 3Com/3Com Corp., Novell/Novell, Inc., Ethernet/Xerox Corp., Token Ring, IBM/International Business Machines.

WYSE

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40 Wholesale, Retail Trade
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60 Government — State, Federal, Local
65 Communications Systems, Public Utilities, Transportation
70 Mining, Construction, Petroleum, Refining, Agric.
80 Manufacturer of Computers, Computer Related Systems or Peripherals
85 Computer & DP Services, including Software, Service Bureau, Time Sharing, Consulting
90 Computer Peripheral Dealer, Distributor, Retailer
75 User, Other
99 Vendor, Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
10 Vice President, Asst. VP
21 Dir., Mgr., Supvr., IS/MIS/DP Services
22 Dir., Mgr., Supvr., of Operations, Planning, Adm. Services
23 Dir., Mgr., Supvr., Analyst of Systems
31 Dir., Mgr., Supvr., of Programming
32 Programmer, Methods Analyst
35 Dir., Mgr., Supvr., DA/WP
99 Data Comm., Network Systems Mgr.

OTHER COMPANY MANAGEMENT
11 President, Owner, Partner, General Mgr.
1E Vice President, Asst. VP
13 Treasurer, Controller, Financial Officer
41 Engineering, Scientific, R&D, Tech. Mgt.
81 Sales/Mktg. Mgr.

OTHER PROFESSIONALS
90 Consulting Mgr.
70 Medical, Legal, Accounting Mgt.
80 Educators, Journalists, Librarians, Students
99 Others _____ (Please specify)

3. COMPUTER INVOLVEMENT (Circle all that apply) Types of equipment with which you are personally involved either as a user, vendor, or consultant.

A Mainframes, Supermainfs
B Minicomputers, Small Business Computers
C Microcomputers, Desktops
D Communications Systems
E Office Automation Systems
F No Computer Involvement

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23 Dir., Mgr., Supvr., Analyst of Systems
31 Dir., Mgr., Supvr., of Programming
32 Programmer, Methods Analyst
35 Dir., Mgr., Supvr., DA/WP
99 Data Comm., Network Systems Mgr.

OTHER COMPANY MANAGEMENT
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12 Vice President, Asst. VP
13 Treasurer, Controller, Financial Officer
41 Engineering, Scientific, R&D, Tech. Mgr.
81 Sales/Mktg. Mgr.

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99 Others _____ (Please specify)

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C Microcomputers, Desktops
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PCs & WORKSTATIONS

SMALL TALK

Michael Alexander

Lesson from the toymaker

There are an awful lot of personal computer hardware and software vendors that could learn something about marketing from Nintendo, the top maker of video game players and software. The company expects to take in about 80% of what analysts predict will be a $2.6 billion market this year alone. We're not talking about fun and games; this is a serious business.

Nintendo jumped into video games a few years ago, at about the same time that most companies were straggling off the playing field. Too many short-sighted companies hawking too many low-quality products put a damper on the first round of video games. Nearly all of the companies then in the business concluded that the market was saturated and that the video game was merely a passing fad.

Nintendo, however, saw

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Inside

- Ize info manager eases interview process. Page 39.
- Laptop all-in-one road kit released. Page 41.

Intel's DVI brings sneak peaks

ANALYSIS

BY J. A. SAVAGE
CW STAFF

Before you take your next trip to the Bahamas, you may be able to drop into your travel agent's office and tour the islands, the hotels and the restaurants on a personal computer. In one of its prototype applications, digital interactive video could take the surprise out of discovery and the sting out of reserving a bad hotel room.

Intel Corp. began to ship its development systems for digital video interactive (DVI) this month. Some say the technology will be the next logical step beyond high-definition television, using digital compression and decompression to transmit clear signals. Until then, Intel is the driving force for applications development and standards for the technology.

DVI software such as travel packages or home-designer kits with which the user can pick out the dimensions of a room, the wallpaper, the furniture and upholstery, driver's training and other educational uses is in its infancy.

"It's not like you could set up a higher level program, like an author," said Martin Nisenholtz, president of Sage Worldwide, Inc. in New York. As a beta-test site, Sage developed an application to display advertising marketing information. For instance, a video of a "focus group" in which consumers discuss advertisements that tickle their fancy could be stopped, and ads referenced in the conversation could be viewed for context.

That application was developed more than a year ago. "It was raw then, no question about it," Nisenholtz said.

Arthur Andersen & Co. in Chicago, which developed a system to analyze manufacturing floor efficiencies, also had a steep learning curve. "It was difficult in its own right, but not that bad," said Mark Nichols, the lead analyst for the application development project. The programmers for the project, however, had little prior experience in C code, which is DVI's basis.

Continued on page 42

Mapinfo charts business course

BY RICHARD PASTORE
CW STAFF

For users who need comprehensive graphical depictions of geographic data, Mapinfo's computerized maps may indeed be treasure maps. But even Long John Silver might have had trouble understanding the cryptic user manual, and the slow map-drawing process would likely have tested his patience, users said.

"I couldn't live without it," said Stan Krolak, president of Las Vegas-based real estate consulting company Stan Krolak Industries.

When examining the feasibility of a proposed shopping mall, for instance, Krolak said he uses Mapping Information Systems Corp.'s Mapinfo program to plot the locations of existing malls within a given radius of the proposed site. The program prints out a map showing the potential competition.

Mapinfo, which runs on IBM Personal Computer XTs, ATs and compatibles with 640K bytes of memory, can access location coordinates from users' Ashton-Tate Corp. Dbase files or from direct user input.

Built-in maps

Locations can be identified and manipulated by their street address, ZIP code, city, state or other geographic coordinates. U.S. and world maps are built-in, but users must separately purchase city maps, which range from $95 to $2,000, depending on area and detail. The program costs $750.

The Syracuse, N.Y., police department paid $500 for its computer map of Syracuse, but the cost has been justified: Since the department began tracking crimes last year with Mapinfo, the burglary rate in the city has dropped 23%, according to Sgt. James Quick in the department's information systems management division.

"Computers don't go out and catch crooks," Quick noted, but the easily digestible Mapinfo graphics help the department deploy its limited resources in the locations where they can be most effective.

Continued on page 42

Users can divide Mapinfo *city maps into quadrants and plot locations by street address*

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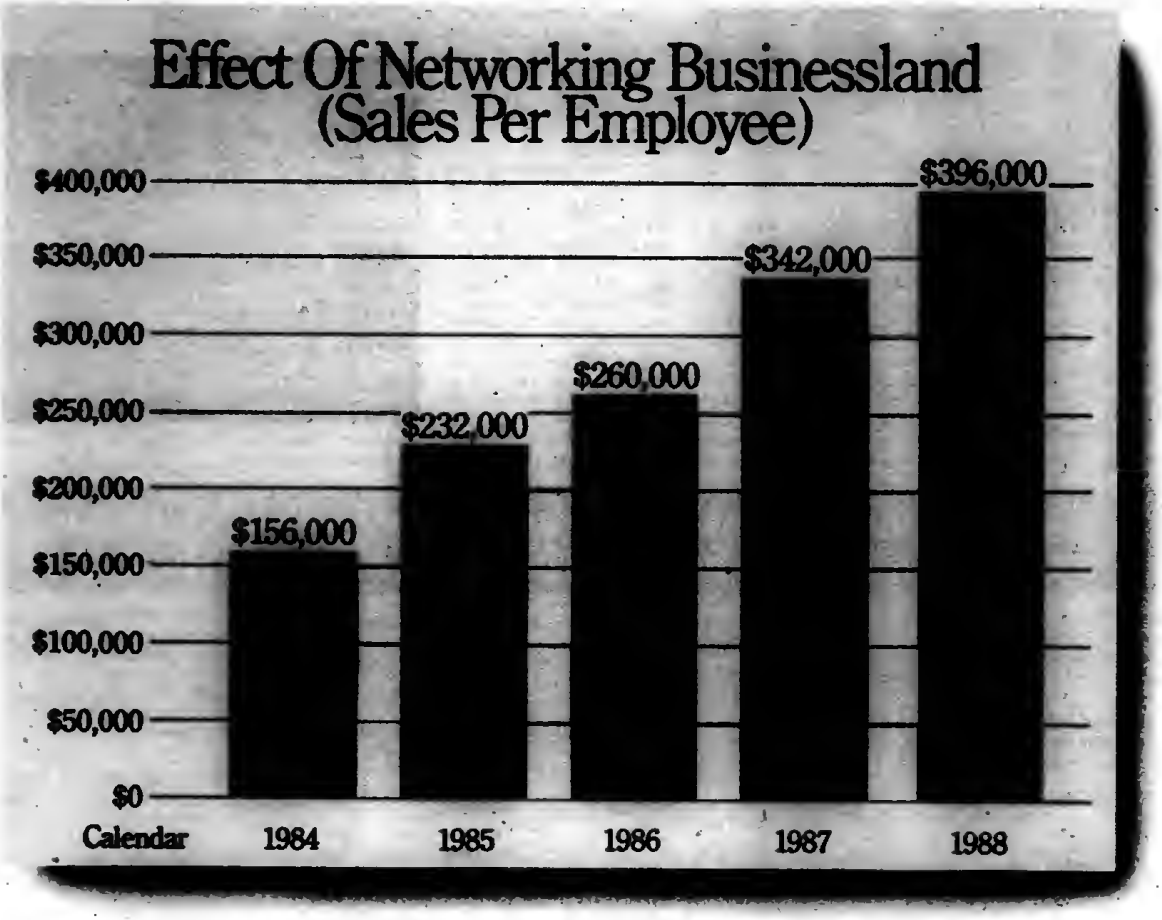

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MICRO BITS

Douglas Barney

Squashing Dbase bugs

Will Dbase IV ever score? Not many products are as controversial as Ashton-Tate's Dbase IV. Sure, there's Lotus' 1-2-3 Release 3.0, which, though late, still doesn't run on most lower priced personal computers. And there is Microsoft Windows, the wave of the future that still slows down the most advanced users and hogs memory as if it were designed by dynamic random-access memory makers.

But mention the name Dbase IV in a room full of PC users and see what happens. Some people shake and roll their eyes or get more visibly steamed. On the other side, fans think it is a gift from God and challenge critics to prove them wrong.

Why does this product raise so many hackles and have such black and swollen eyes?

Black eye No. 1 surfaced when Dbase IV was late. It is also tremendously confusing and buggy, which blackened the other eye. In fact, the bugs are too numerous to mention, and if you don't believe that, then here's a little story.

After any major product ships, a good computer journalist starts looking for bugs. Last November they were found, but Ashton-Tate wasn't so sure. So it spit out the names of five or so people that were supposed to

Continued on page 43

Ize info manager plays role in prized TV series

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

BOSTON — Imagine the task of organizing 10,000 pages of text from 11 years' worth of interviews with 750 people — each with a highly personal view of the civil rights movement.

That was the challenge confronting Robert Lavelle, vice-president of Blackside, Inc., a documentary film company producing both a book and a public television series on the past 30 years of the civil rights struggle.

Lavelle found his answer in Ize, a software package from Persoft, Inc. that falls into the specialised category of personal information managers (PIM).

Running Ize on his IBM Personal Computer AT with 40M bytes of hard-disk storage, Lavelle was able to store, retrieve and sort through hundreds of interviews, using up to 500 keywords and phrases to search the database for specific subjects.

> "WE COULD get all the relevant material for each event, put it in order, print it out and then work with it."
>
> ROBERT LAVELLE
> BLACKSIDE

The film company is producing a 14-hour public television series called *Eyes on the Prize*. The first six hours of the program ran in 1987 — winning more than 30 national awards — and the next eight hours will be broadcast in January 1990. Published in conjunction with the film will be a book called *Voices of Freedom: An Oral History of the Civil Rights Movement* by Steve Fayer.

"It's perfect for dealing with interviews to create an oral history, and it's invaluable in research," Lavelle said. "Basically, we could get all the relevant material for each event, put it in order, print it out and then work with it."

The film producers used Lotus Development Corp.'s Manuscript to create the actual script. Lotus was also one of the project's early sponsors. "The Lotus program is good for footnotes and superscripts and particularly good for scripts because you can do vertical half-pages with comments along one margin," Lavelle explained.

Relying on the Ize keyword searching function, he was able to scan the interviews for the best material on specific events. Once that material was pulled out and trimmed back, the interviews were fitted into story lines and edited into "a three-dimensional perspective on each event," Lavelle said.

For example, one of those events centered on former President Lyndon B. Johnson, who in 1965 first used the phrase "we shall overcome" in one of his speeches.

"When I typed in those keywords for the phrase, the producer [Blackside founder Henry Hampton] was standing next to me and watching," Lavelle said. "He could not believe the number of people we had who commented on that LBJ speech."

Using Ize, Blackside has created one of the largest archives ever compiled on the civil rights movement. It encompasses the views of participants, activists and opponents.

Unlike other histories of the civil rights movement, this one is keyed into people's remembrances of specific events rather than their own life stories, Lavelle said.

"Ize is not magic. We had to know this stuff in our heads, too," he pointed out. "But it helps us draw connections between them. We can pull up this one person who commented on something, for example, and find out he later formed the Black Panthers."

PIMs such as Ize are intended for use as strategic tools to handle the glut of computer information. They are designed to manage and organize information rather than create it.

The software's drawbacks are its lack of word processing capabilities, its limited power and the large amount of memory it requires, Lavelle said: "Unless we were to do another oral history, I doubt we would use Ize as extensively."

Researchers and college professors are the biggest market for Ize so far, said Dennis Steadman, a sales executive for Wisconsin-based Persoft. The product retails for $445.

Although the software is "comfortable" with 380K bytes of memory, Steadman said, Persoft recommends at least 512K bytes to run Ize.

Once the civil rights project is completed, Blackside will hand over the computerised archive to the Civil Rights Project, Inc., a sister organisation located in the same building.

Lavelle said the Boston Museum of Afro-American History also plans to set up an *Eyes on the Prize* archive, making the interviews available to scholars and researchers. "When these are all cleaned up, through the Ize software, the interviews will be very easy for people to access," he noted.

Blackside produced an award-winning civil rights documentary with the help of Persoft's Ize, a personal information manager

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Alexander

FROM PAGE 37

that there was still plenty of money to be made in video games.

The company was astute enough to realize that that even if the past generation of youngsters had had its fill of video games, an entirely new generation was on its way. Heck, the folks at Disney have been recycling animated films produced as much as 50 years ago to successive generations of kiddies.

What Nintendo also realized was that it would have to maintain at least some semblance of control on the supply of games for its enormously popular Family Entertainment System (FES) to avoid the same glut that sank the business the first time. The company limits the number of games that a licensee can produce for its machines to five.

To assure there was sufficient diversity, Nintendo took the additional step of demanding final approval on which games are to be marketed by its licensees. Who knows how the firm managed to pull it off, but it also demanded that it be allowed to manufacture the games for its licensees. Imagine if IBM had been so discriminating and hard-nosed when it jumped into the PC business. Things would be quite different today, don't you think?

Too tight a grip?

Nintendo is taking a lot of heat in recent months from companies that complain the giant game maker is keeping too tight a grip on the market. Atari, which had annual revenue of $2 billion a year at the height of the first video game wave, is now a distant second and hoping to generate at least some of its revenue in $100 million worth of lawsuits against Nintendo. Atari, among others, is complaining that Nintendo has monopolized the market with its stringent licensing agreements.

Atari is one company that could have achieved the same sort of success that Compaq or Zenith have in the PC business if it hadn't been interested only in making a quick buck back in the early days.

What Nintendo has so ably demonstrated is that it is in business for the long haul. The company is spending some $50 million this year touting its machines and games on television, in its own magazine and — believe it or not — its own breakfast cereal. It's not surprising that 17% of U.S. homes have a FES machine.

In Japan, where Nintendo is only the second best-selling game player, Nintendo game machines are being used to connect to on-line databases that offer games, stock market tips and other information. The company has been mulling over offering a similar service here, perhaps with AT&T.

Not long ago, Nintendo executives said that their game machine is really nothing more than a Trojan Horse of sorts in the home market. They believe the company's future is in home productivity and not just in games. Who knows, they may also go after the PC business.

Alexander is a Computerworld senior editor, PCs and workstations.

Laptop road warrior kit

If you travel frequently with a laptop computer, you may have found that plugging the unit into a telephone system can be tricky even under the best of circumstances.

Computer Products Plus, Inc., a Huntington Beach, Calif., company, thinks it has hit on a solution that it calls the Road Warrior Toolkit. For $99, the company is offering a travel pouch containing all the necessary tools, including a lighted magnifier, and adapters to hook up a modem to almost any U.S. phone system. The kit comes with instructions that guide users through several types of installations, from using a simple Y connector to connect phone and modem at the same time to grabbing onto wires under a wall plate with alligator clips.

Imagine working 26,000 hours without a break.

Mapinfo

FROM PAGE 37

Quick plots the locations of the city's average 400 to 600 burglaries per month. "Then I'll go to a copy of the map I produced a month before and see if any areas of concentration have changed. We're trying to tie the incidents to individuals who, generally speaking, operate in the same area," he said.

Quick said he tracks other crimes similarly. In the days before Mapinfo, the department penciled in incident locations on photocopied maps. Mapinfo's advantage is that "it makes the information instantly available and lets you go back and manipulate it," Quick said.

The Youth Environment Study (YES) in San Francisco, which runs street outreach programs to combat the spread of acquired immune deficiency syndrome, uses Mapinfo to plot locations of its public depots of condoms and bleach bottles, which are used to sterilize needles. With the maps, it compares the depot locations with the rates of AIDS outbreaks in corresponding areas, thus determining the effectiveness of its program.

"Mapinfo makes the information visual and a lot easier to understand," said research assistant Sean Little. The printed maps lend themselves well to presentation packages, which YES is now preparing for use at conferences, Little added.

Read it and weep

Ironically, the directions for Mapinfo are hard to follow, users said. "The manual is lousy," Krolak stated. "Many things are assumed when they should be explained." Another problem, according to Little, is that map drawing is "irritatingly slow," even on his Intel Corp. 80386-based PC. "I've heard that on machines other than the 386, it is excruciatingly slow," he said.

Even more annoying, Krolak said, was paying $500 for his Mapinfo computer map of Las Vegas, which turned out to be accurate only up to the mid-1960s — not very useful in a city that sees 6,000 people move into town permanently per month. Krolak had to turn to other sources for a map at considerable expense.

A spokesman for Troy, N.Y.-based Mapping Information Systems acknowledged that some maps are more current than others. "We can get you a map of New York less than six months old," he said. Users may purchase available updates at additional cost or use the Mapinfo editing feature for revisions.

The firm is addressing its documentation faults, but the complexity of the graphics will continue to hamper drawing speed, the spokesman said.

Intel

FROM PAGE 37

"The challenges aren't so much technological as consumer-driven. Without the market yet, it's difficult to create applications. It's the chicken-and-egg problem," Nisenholtz said.

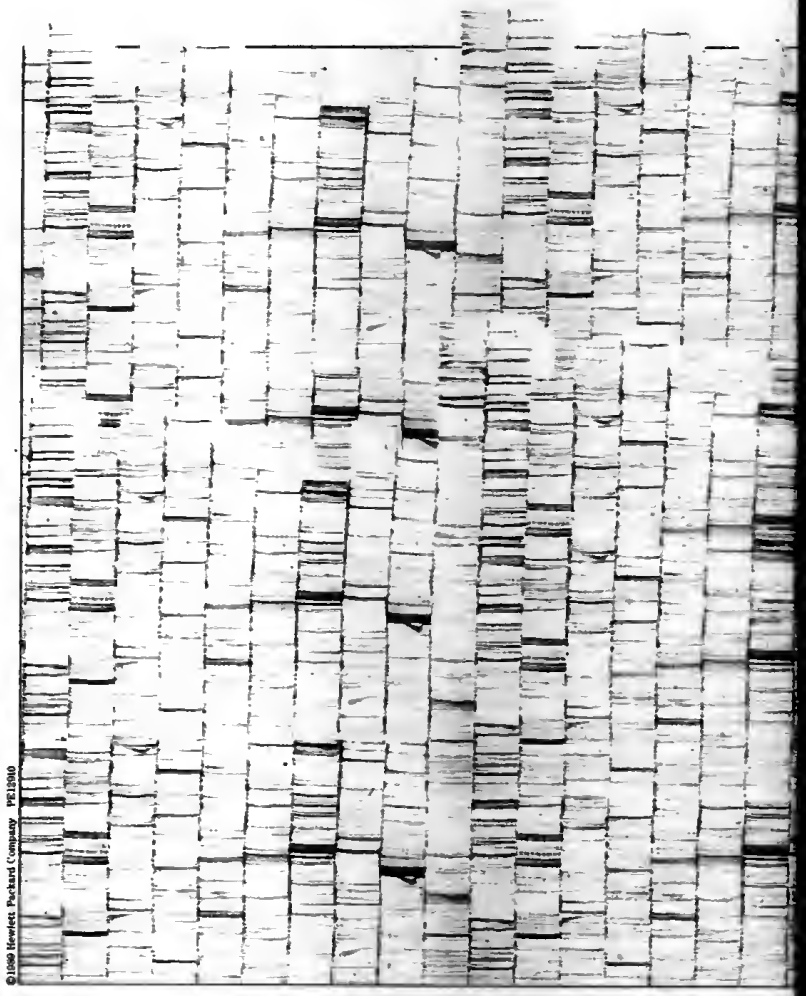
While developers try their hand at real-world applications, Intel is continuing to perfect its hardware technology, specifically in the compression and decompression of digitized data.

Directly digitizing video without compression is too much for a hard disk. "It would use up an entire drive very quickly," said Tim Williams, a senior engineer at Intel. The data is compressed onto a compact disk instead and is decompressed by Intel's chips within the computer. A compact disk holds about an hour's worth of digital video.

Compression and decompression is done within the workstation-size machine marketed by Intel. The chip set responsible for this includes a pixel processor running at 12.5 million instructions per second, a decompressor and an output-display processor.

However, the computer can only compress information in real time at a level the company calls "edit-level video," which means the quality is poor. For higher quality, data must be sent to Intel's Compression Service Facility, where it is compressed by a Meiko, Inc. 64-node parallel computer. From there, it is sent to a compact disk master.

Williams said that the day



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when a consumer will simply be able to receive digital video in real time through cable or satellite and interact with it as desired is not on the horizon.

"The real problem is the cost-performance ratio for bandwidth compression," said Yves Faroudja, president of Faroudja Laboratories in Sunnyvale, Calif., and an inventor of television enhancement devices. "For an extremely high price we know how to do it. The problem is we don't know how to compress it without losing quality."

Indeed, in a recent demonstration, digital video was no better, and in some applications much fuzzier, than current 12-in. television monitors.

Yet Faroudja believes that DVI will grow into the technology of the next century.

Barney

FROM PAGE 39

have had smooth Dbase IV sailing. They described more bugs, or what Ashton-Tate euphemistically calls "anomalies."

Bug reports, along with the lack of a compiler, have scared away a good many customers, *for now*. Clearly Dbase IV is in big, big trouble. So should Ashton-Tate just cash it in? Is Dbase IV dead meat?

Hardly. But to gain this confidence we must go to the root of Dbase IV's problem, which is easiest to describe in nontechnical terms. You know how snakes do seemingly crazy things like swallowing an animal whole? Well, snakes actually succeed. That's what Ashton-Tate tried to do with Dbase, but in this case, it bit off too much. That is why you hear a choking sound emanating from Torrance, Calif.

The overambitious project added an easy-to-use interface, an application generator that creates Dbase code, SQL and stuff that lets programmers jazz up applications with better menus and whatnot. Then it tried to boost overall performance. A lot of things work and are usable. But a lot is also far from perfect.

Some insiders believe Dbase IV will never be completely bug-free because of the complexity of the task. Paradoxically, Ashton-Tate tried to give users everything they want, but in doing so created bugs that nobody wants.

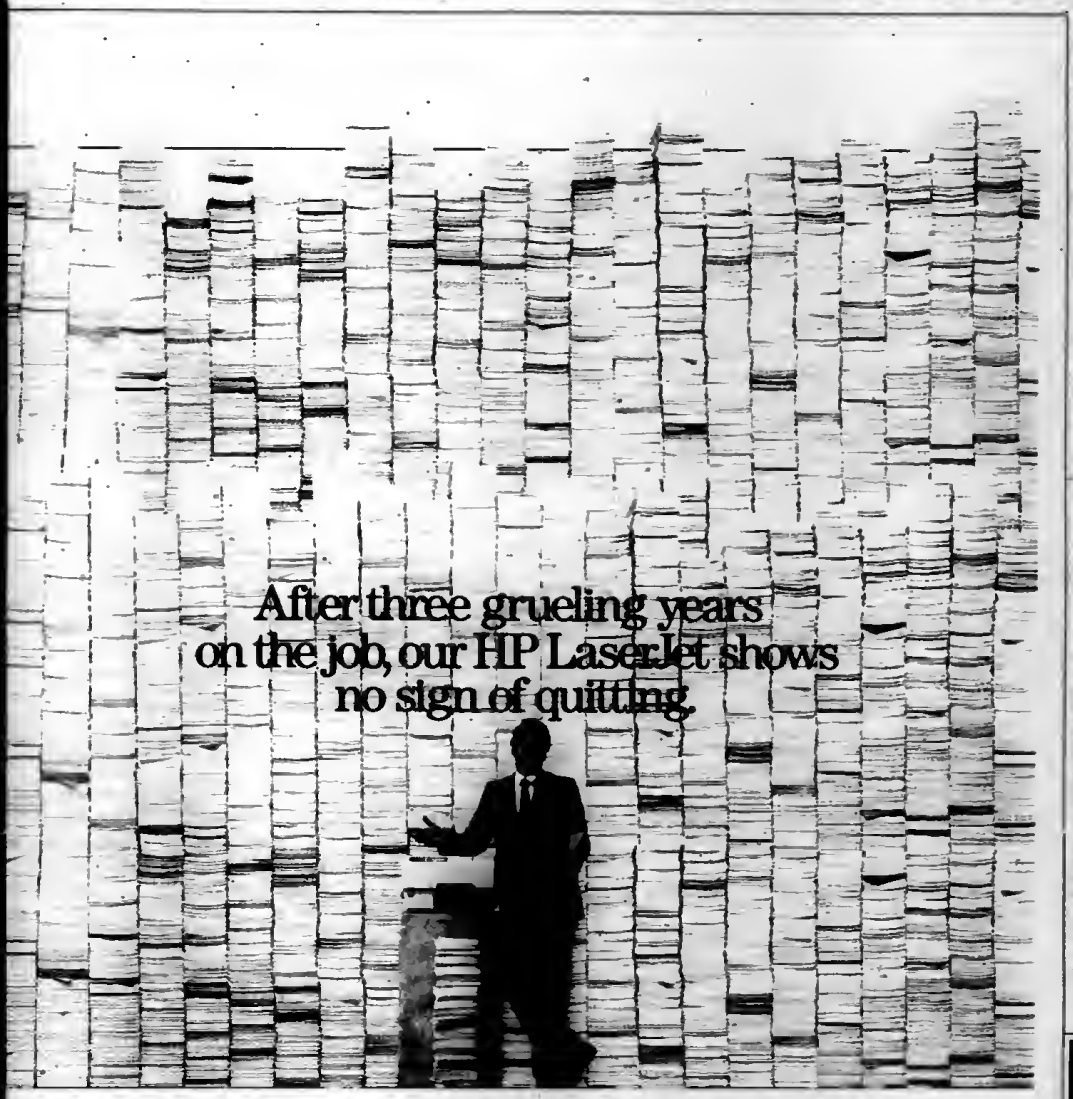
But critics often forget that if you dig deeply, Dbase III Plus also has bugs. So do a lot of other programs. Ashton-Tate needs to make Dbase IV relatively clean and keep users up on remaining "anomalies," which it has already gotten high marks for.

Like Lotus, which had users upset but not enough to switch, Ashton-Tate can still make things right. Dbase users are loyal — bordering, some believe, on insanely loyal. Yet they are largely faithful to the Dbase language and not the product. If Dbase IV is properly fixed, users will come back, and Ashton-Tate will escape the has-been vacuum that sucks down firms that fail to keep pace.

The smartest thing is moving the Dbase language to larger systems, such as VAXs and just about every Unix-based system known to man. If it all works out, then programs written for piddling PCs will run on systems that actually allow people to share data, accommodate large files efficiently and have already taken care of issues such as data integrity and security.

Assuming all works out, Ashton-Tate may even grow dramatically, something that hasn't happened for a couple years. If problems aren't straightened out, then clearly the opposite will happen.

Barney is a *Computerworld* senior editor, PCs and workstations.



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NEW PRODUCTS

Systems

NEC Home Electronics, Inc. has cut the price for its Prospeed 386 Modular workstation.

According to the company, because of the reduced cost of components, the price for the 40M-byte version has been lowered from $7,699 to $6,599, the 100M-byte version has been changed from $8,999 to $7,699, and the Docking Station expansion unit has dropped from $1,199 to $999. The Prospeed 386 computer is said to be a desktop-equivalent modular personal computer with black and white display, 16-MHz 80386 processor, up to 10M bytes of main memory, a 100M-byte hard disk and seven expansion slots.

NEC Home Electronics
1255 Michael Drive
Wood Dale, Ill. 60191
312-860-9500

Software application packages

Videotext Systems, Inc. has announced a color-separation software package for IBM Personal Computers and compatibles.

Called T-Sep, the program works in conjunction with image graphics boards to allow users to create color separations for four-color process printing equipment using desktop PC equipment, the vendor said. The package is compatible with Xerox Corp.'s Ventura Publisher and Aldus Corp.'s Pagemaker and is priced at $995.

Videotext Systems
Suite 205
8499 Greenville Ave.
Dallas, Texas 75231
214-343-4500

Intex Solutions, Inc. has revised two of its financial analytic add-in packages for Lotus Development Corp.'s 1-2-3.

Bond Yield Calculations Version 2.0 reportedly includes additional functions for convexity and net-after-tax pricing and offers support for several new instruments, such as Odd Coupon Bonds and Stepped Bonds. It is priced at $595. Version 1.1 of Mortgage-Backed Calculations provides the ability to handle adjustable rate mortgages, the company said, and carries a price tag of $395. Both versions will be provided free of charge to existing users.

Intex Solutions
161 Highland Ave.
Needham, Mass. 02194
617-449-6222

Isogon Corp. has released Tomorrow, an add-on product designed to provide business forecasting capabilities to users of Lotus Development Corp.'s 1-2-3 spreadsheet.

The product reportedly automates the entire forecasting process rather than having the user designate techniques and parameters and allows users to perform forecasts by highlighting ranges on existing spreadsheets, including formula cells and labels.

Tomorrow costs $129.95.

Isogon
330 Seventh Ave.
New York, N.Y. 10001
212-967-2424

Utilities

A software package recently released by Communication Intelligence Corp. reportedly allows users to update Ashton-Tate Corp.'s Dbase III or Dbase III Plus using a pen and paper form.

Formmapper works in conjunction with the company's Handwriter Data Entry System so that when the user writes on a preprinted form that is placed on a digitizer tablet, the handwritten entries appear to the computer to be keyboard-entered. The Handwriter Data Entry System consists of a coprocessor card for personal computer compatibles powered by a Motorola, Inc. 6800 processor and digitizer tablet and sells for $1,279. Formmapper costs $499.

Communication Intelligence
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based on Adobe Systems' hinting technology; and the Studio Series, with unhinted and unencrypted fonts.

Available in June, the Desktop Series is priced at $99 per volume, while the Professional and Studio Series are available immediately, both selling for an average of $169 per volume.

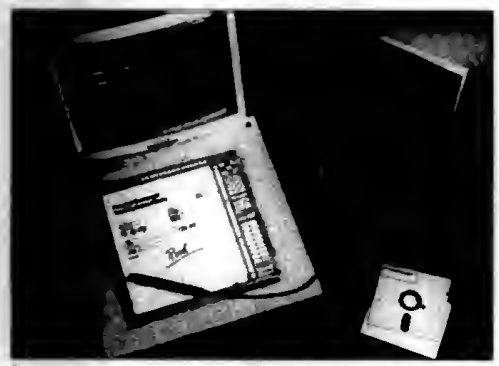
Agfa Compugraphic
90 Industrial Way
Wilmington, Mass. 01887
508-658-5600

Okna Corp. has released a program to enhance Microsoft Corp.'s Windows with five integrated business and personal tools.

The Desktop Set reportedly includes Calculator, emulating the functionality of desktop printing calculators; Dialer, for storing up to 105 phone numbers and names and logging calls; and Phone Book, which is said to hold an unlimited number of entries with notes. In addition, the set is said to include search capabilities, password protection and printing functions; Calendar, in year, month, appointment and expense modes; and Viewer, a program designed to display ASCII files.

The Desktop Set operates on any desktop or portable personal computer running Microsoft Windows. Site licensing for the set costs $129; until Aug. 31, the program can be ordered directly from the company for $69.

Okna
P.O. Box 522
Lyndhurst, N.J. 07071
201-460-0677



Formmapper *lets users update Dbase files via a paper form*

Agfa Compugraphic Division has introduced a series of Adobe Systems, Inc. Postscript and Postscript-compatible font products designed for the desktop computer market.

The Agfatype Collection was developed for users of Apple Computer, Inc. Macintosh and IBM Personal Computer, Personal System/2 and compatible computers that use Postscript and Apple's Quickdraw. The Collection reportedly consists of three complementary series: the Desktop Series, which includes 35 typefaces for the Macintosh; the Professional Series, which is

Peripherals

A six page/min., 300 dot/in. laser printer has been introduced by Sharp Electronics Corp.

Designed for desktop publishing and word processing applications, the JX-9500 measures 13.4 by 14.2 by 10.5 in., the vendor said. Additional features reportedly include a front control panel, 250-sheet input and output trays and an optional automatic envelope feeder. Two font card slots are also provided. The unit ships this month and is priced at $1,995.

Sharp Electronics
Sharp Plaza
Mahwah, N.J. 07430
201-529-9500

A wireless remote-control device designed to aid in Personal Computer presentations is now available from AMX Corp.

The KI-One Keyboard Commander reportedly allows the user to control the computer keyboard via radio-coded remote transmissions. It incorporates a 16-button transmitter and does not require a serial port or software drivers for operation, the vendor said. The product is priced at $655.

AMX
12056 Forestgate Drive
Dallas, Texas 75243
800-222-0193

Board-level devices

Everex Systems, Inc. has announced a Hercules Graphics Card Plus-compatible monochrome graphics board for IBM Personal Computers, PC XTs and ATs and compatibles.

Fontview offers full support for Wordperfect Corp.'s Wordperfect 5.0 in both random-access memory font and graphics preview modes.

The card provides extended, high-resolution graphics modes up to 1,024 by 704 pixels on a standard monochrome monitor. It costs $199.

Everex
48431 Milmont Drive
Fremont, Calif. 94538
415-498-1111

AMX's KI-One *permits remote keyboard control*

A continuous paper-feed system for Eastman Kodak Co. Diconix 150 and 150 Plus printers has been announced by Printworx, Inc.

The CPF System reportedly uses standard-size paper rolls and requires no modification for attachment and operation. It is especially suited for insurance, medical and scientific applications that require printouts of variable or customized lengths, the company said. The CPF System costs $39.95.

Printworx
3322 S. Memorial Pkwy.
Huntsville, Ala. 35801
205-880-3626

Electrim Corp. has announced an electronic imager that operates with the IBM Personal Computer, PC XT and AT, Personal System/2 Models 25 and 30 and compatible systems.

The EDC-1000 includes a camera, 6-ft. cable, lens, computer interface card manual and software, the vendor said. It reportedly provides 8-bit (256 gray shade) operation and multiple field integration and is said to be specifically suited for security surveillance, office automation, desktop publishing and a variety of other image data applications. The product costs $400 and includes a one-year warranty.

Electrim
P.O. Box 2074
Princeton, N.J. 08543
609-799-7248

Western Digital Corp. has introduced a controller upgrade kit for IBM Personal Computer ATs and compatible systems.

Called Speedkit, the product reportedly doubles the transfer rate of modified frequency modulation (MFM) storage subsystems in ATs and compatibles. It supports two ST506 MFM drives and two floppy disk drives in both 5¼-in. and 3½-in. form factors, the company said. The product includes a controller card, data and control cables, floppy disks and an installation guide and costs $225.

Western Digital
2445 McCabe Way
Irvine, Calif. 92714
714-863-0102

A 12.5-MHz accelerator card for Intel Corp. 8088- and 8086-based personal computers has been introduced by Tallgrass Technologies Corp.

Dubbed Shortcut, the half-slot card employs 16K bytes of zero-wait state cache memory and provides users with an upgrade path for OS/2 applications, the company said. An optional floppy controller is available to provide built-in expandability for up to four floppy disk devices, plus parallel and serial port connections.

Shortcut costs $495.

Tallgrass Technologies
11100 W. 82nd St.
Overland Park, Kan. 66214
800-825-4727

DATA STREAM

Ellis Booker

A token gesture

The company with 90% of the Token-Ring local-area network market didn't bother to attend the first meeting of the Open Token Foundation (OTF) last month in St. Louis. As OTF co-founder and President Robert Madge noted, "IBM is the ghost at the feast."

Madge might more accurately have said *meat* of the feast. Without IBM's participation, it is hard to understand how OTF, which was established late last year to ensure the compatibility of various 802.5-based products, will survive, much less serve the users it hopes to attract.

Try as they might, neither Madge nor the handful of users who attended the day-long OTF meeting could offer a compelling reason why IBM would want to join. In a wonderfully diplomatic turn, Madge alternately praised and chided IBM's empty chair.

He praised IBM for what he called the "openness" of the IEEE 802.5 protocols, but then he correctly observed that those protocols do not address key implementation details. And

Continued on page 52

LANs: Fighting network phobia

BY AARON BRENNER
SPECIAL TO CW

Compounding the problems typically associated with local-area network installations is the fact that LANs are often viewed with suspicion by corporate end users who have been working quite happily with terminals or stand-alone personal computers.

PC users are afraid they will lose control of their applications and data once their PCs become networked. They also fear a loss of independence. On the other hand, mainframe terminal users believe their lives will be unnecessarily complicated by network operations. They are anxious about losing security.

Many users have grown to cherish the PC as their own device rather than seeing it as a corporate tool, says Alex Perez, information center analyst at Southeast Bank NA in Miami. "People think we are taking control of their machine when, in fact, we are giving them more freedom," he says.

Perez does not feed those fears by forcing people onto the LAN. "We try to sell them on the benefits. Once we get one in, the feeling spreads; department A sees that department B is on the LAN and people ask themselves why they are not. The networks sell themselves."

TOM PATTIE

A similar scenario took place at the *Houston Chronicle*, says Director of Information and Technology Resources Susan Shows. PC users are won over once they see the benefits that a LAN can provide.

Despite end-user apprehensions, if the network installation is properly thought out and executed, the benefits of networking can be seen in short order. The key to a successful installation is that "the people network should drive the computer network rather than vice versa," says Jessica Lipnack, president of The Network Institute, Inc. in Newton, Mass.

Unfortunately, most comput-

Continued on page 50

Northern Air Freight waltzes onto Danznet

ON SITE

BY ELLIS BOOKER
CW STAFF

BELLEVUE, Wash. — When it was acquired in February by European freight-forwarding giant Danzas Ltd., Northern Air Freight came equipped with an on-line information network for the U.S. and an integrated freight management system.

In the ensuing months, Northern Air's information systems personnel have focused on linking its network — based on Wang Laboratories, Inc. computers — to Danznet, a multivendor X.25 packet network established by Danzas over the past year.

According to Cindy Smith, director of IS and data processing at Northern Air — now known as Danzas-Northern Air — the two networks will be connected using various private and public X.25 networks. In the U.S., the X.25 network will be Wang Information Service's Wangpac; in Europe, the X.25 provider will depend on the country.

"We're going to add Danznet as an additional transport option on our network," Smith said, adding that the ideal situation is for users, who now send about 10 messages a minute across the network, not to have to know the source or destination of a message.

"A computerized directory will designate how a message is sent, either by telex, fax or Danznet electronic mail," Smith explained.

Achieving this sort of transparent communications between its many worldwide subsidiaries has been a strategic goal during the past year for Danzas, which hopes to complete its worldwide X.25 Danznet network in early 1990.

Noting that the OSI protocols have yet to be fully codified, Smith said, "The pieces they need are there." In addition, she said the parent company has given its subsidiaries a number of choices for tapping into Danznet.

Similarly, automatic protocol

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- Telecom budgets stabilize at 0.6% of revenue. Page 48.
- New state laws aim to end "junk fax." Page 52.
- Wang unveils PC gateways. Page 54.

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Telecom budgets steady at 0.6% of ICA revenue

BY ELISABETH HORWITT
CW STAFF

DALLAS — Telecommunications budgets as a percentage of revenues have hovered around 0.6% for the last four years, according to a member survey recently published by the International Communications Association (ICA).

The Dallas-based organization found that banks, computer companies and nonprofit institutions such as universities were among the biggest telecommunications spenders in 1988, following a survey of 167 of its members in 16 industries.

Among the industries whose telecommunications budgets represented the smallest portion of revenues were food processing, steel and textiles/apparel, according to the results of the study (see chart).

Low-end spenders

The survey also found that 38.9% of respondents reported telecommunications budgets in the $1 million to $10 million range; 44.9% in the $10 million to $50 million range; 10.8% in the $50 million to $100 million range; and 5.4% with telecommunications budgets of more than $100 million.

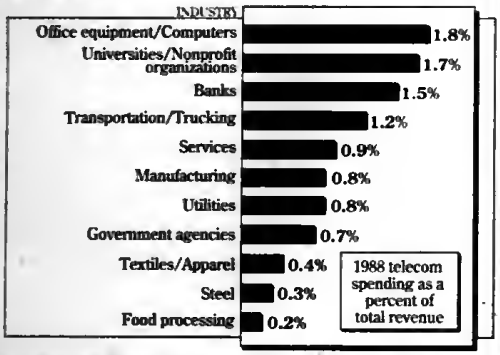
Members expected their telecommunications budgets to increase on average by 4.81% from 1988 to 1989, according to the ICA.

Service industries expected their budgets to increase the most — 13.78% — while government agencies were next at 12%.

Banks were toward the bottom with 1%, while steel and textiles/apparel actually expected their budgets to decrease this year, the ICA said.

Measuring up telecom budgets

A survey of 167 ICA members shows that suppliers of office equipment and computers are the most aggressive telecom spenders in relation to their revenue



SOURCE: INTERNATIONAL COMMUNICATIONS ASSOCIATION — CW CHART: FRANK C. O'CONNELL

Gigatrend offers 4mm DAT storage

BY PATRICIA KEEFE
CW STAFF

CARLSBAD, Calif. — Gigatrend, Inc., a supplier of storage systems, is shipping what it claims is the first 4mm digital audio tape (DAT) storage system for networks packaged with Novell, Inc. Netware-specific application software.

The primary advantage to users is greatly increased capacity — at a price, said Hinda Chalew, an analyst with Dataquest, Inc. in San Jose, Calif.

The product is targeted at file-by-file backup and restore in a typical Novell environment and can be used for dats distribution applications such as transporting large volumes or archiving records. The retail price of a single drive complete with controller and software is $5,950.

DAT is an emerging backup storage technology that involves using helical-scan technology to write data onto media the size of audiocassettes [CW, June 12].

The Gigapack-Lansafe system lets LAN users store and retrieve more than 1G byte of data. This capacity is equivalent to 20 60M-byte ¼-in. cartridges or more than 50 ½-in. reels of tape, the vendor said. Its only competitor is an 8mm DAT storage device from Exabyte in Boulder, Colo., that supports up to 2G bytes, Chalew said. DAT also features greater reliability, "but the technology is not yet in wide use, so this has yet to be proven," she said.

Reliability factor

Gigatrend claimed the advantages of third-generation helical-scan recording make its DAT drives far more reliable than their ¼-in., ½-in. and 8mm predecessors. The lower tape speed used in 4mm DAT drives also results in cartridges that are less sensitive to vibration.

A multiple-tape management feature gives users access to tape libraries located on the hard disk, enabling quick file recovery. An unattended backup feature supports backup of all volumes and network servers.

The 5¼-in. form factor has a built-in small computer systems interface and provides random file-access capability providing access to hidden files in an average of 20 sec.

Northern

FROM PAGE 47

conversion software will take incoming Danznet messages and convert them to Wang Office messages for use on Danzas-Northern Air's existing network.

"All the users need to worry about is, 'I've got to let this city know some freight is coming in,' " Smith said. She said that each Danzas subsidiary can opt for either a single point of contact to Danzas or separate links to individual cities.

"We made a decision to have all messages [from Danznet] come to Bellevue first," she said, "because some of our locations are not set up for electronic mail and must get a fax instead." At the Bellevue hub, a small messaging switch and router manages incoming telexes and facsimiles.

In addition to the Danznet links, Smith's group of 18 people must find a way to connect six Prime Computer, Inc. systems operated by Danzas' Alltransport. This former Danzas U.S. subsidiary was merged with Northern when Danzas acquired it last year.

Established in 1815, Danzas had revenue of $4 billion last year and is the largest freight forwarder in Europe.

"ALL THE USERS need to worry about is, 'I've got to let this city know some freight is coming in.' "

CINDY SMITH
DANZAS-NORTHERN AIR

However, Danzas's growth by acquisition has given the Basel, Switzerland-based a smorgasbord of hardware and local- and wide-area networks.

Danzas currently has subsidiaries in 36 countries. Its 650 offices worldwide use equipment ranging from IBM, Digital Equipment Corp. and NCR Corp. to Prime and Wang systems.

Moreover, integrating these computers has been a key requirement in the face of the impending unification of the European Economic Community, which is scheduled for 1992. To that end, early last year Danzas began technical feasibility studies on Danznet, an X.25 packet network for electronic data interchange that would use Open Systems Interconnect protocols.

Today, Danznet links 120 hosts and about 4,400 terminals in eight countries. This European component of the network, begun last December and completed in March, is the first step in a worldwide deployment of the network, which is scheduled for completion by early 1990.

EDI: An invitation onto the Danznet?

One future direction of Danznet involves an automated freight management system like the one built by Danzas-Northern. Operational since last August, the system runs on two Wang VS 7310s and will soon be transferred to a new Wang VS 10000; it allows automatic alerts, messages and status reports about all shipped goods handled by the company. The VS 10000 will join a VS 100, eight VS 6s, five VS 5s and three yet-to-be-deployed VS 5000s. For now, Danznet is an electronic mail and freight advisory system. But the future may see an electronic data interchange (EDI) system established between the freight carrier and its customers.

"First they want to get the rest of the sites on-line, and then they'll link to the larger customers using EDI," explained Cindy Smith, director of IS and DP at Danzas-Northern, noting that among her customers, EDI has not been a pressing issue.

"There are a lot of questions, but we've yet to have a lot of customers say, 'Yes, turn on the switch, we'd like to do it,' " Smith said. For the moment, Danzas-Northern offers its customers an EDI-like service it calls Pulse, with which customers can use a personal computer — or a terminal supplied by Danzas-Northern — to retrieve shipment information. The Pulse system also allows customers to send electronic messages to Danzas-Northern.

While its European parent is not working on freight tracking or true customer EDI at the moment, Smith believes these will be a logical application once the Danzas network is complete.

ELLIS BOOKER

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LANs

FROM PAGE 47

er manufacturers and many information systems managers are not looking at corporate networks this way. They are too focused on technology issues instead of business needs.

For example, while discussions about throughput and bandwidth are important, they are also secondary. Network managers should begin their planning efforts by asking about the work that needs to be done, the locations of affected business activity, reporting structures and who needs to talk to whom.

Chronicle's Shows
says groupware pays off

By concentrating on the people side of the network, IS managers are more likely to fit technology to their business rather than tailor their business to technology. The result? Happier, more productive users, network managers say.

At the University of California at San Diego (UCSD), network managers go through a series of steps during network installations to ease the transition for users, says Steve Relyea, vice-chancellor of business affairs. UCSD's 24 campus and building networks connect more than 500 users.

One of the first steps involves standardizing applications software to eliminate the need for constant conversions between file formats. Another tactic is the use of a standardized front-end menu system designed to mask the network's workings.

Further facilitating the acceptance of UCSD's networks is CC:Mail, Inc.'s electronic mail program, also called CC:Mail. "This easy-to-use electronic mail system has made our responsiveness to campus and clients much faster," Relyea says. On the user end, CC:Mail documents each person's contribution to a message, making it easy to see the document's history, he adds.

Groupware applications have generally been a controversial topic in the network world, in part because they are difficult to execute. Few such programs exist, and one of the first, Action Technologies, Inc.'s The Coordinator, caused a furor with its stringent requirements for end-user participation. The developer was forced to completely redesign the product to win user approval.

However, groupware can pay off, providing users with a reason to use and appreciate the network. At the *Houston Chronicle*, Shows says, users love scheduling meetings with their new integrated software package from Uniplex Business Software, which runs on their Sun Microsystems, Inc. workstations and various X Window System terminals. The package builds group schedules from personal calendars.

Other users are not as happy with the software that they initially ran on their networks. At Southeast Bank, users ran into difficulty when they kept using Ashton-Tate Corp.'s Dbase III, Perez says. With a non-network program, users were inadvertently corrupting data because the older program had no mechanism for record- or file-locking — critical facilities for multiuser applications.

The bank's solution was to switch to Trumbull, Conn.-based Dataease International, Inc.'s Dataease. After the switch, end users are able to convert their old Dbase applications and quickly generate much more powerful multiuser applications, Perez says. This has sped network acceptance among a group of users — the applications developers — that was among the most reluctant to move onto the network.

Other users at Southeast Bank benefited from another tactic designed to ease the transition to the network — a user guide. Perez built a beginner's guide to the network, which describes LAN rules, signing on, printer definitions, access and support information.

The guide supplements the menus that Perez has created for each network. The menus are the same as those that Novell, Inc. uses in its Netware network utilities, giving the users a consistent look no matter what network operation they are performing. The user guide is built along the same principles.

Perez captured screen shots of the menus and imported them to a word processing package to create the user's guide. Each screen is explained keystroke by keystroke. "This one document, which is only 10 pages long, eliminated 90% of the calls we used to get," Perez says. "Users don't read manuals. They refuse to, so what you have to do is make something very concise. It is true that a picture speaks a thousand words."

For end users who need still more assistance, there's a remote Help desk. A user having trouble can pick a network menu item which reads "Contact Help Desk." A message is then sent to a remote support person.

Using two utilities from Red Bank, N.J.-based Brightwork Development, Inc. — Netremote and Netmanager — the network support person can take control of the troubled user's PC to guide the user through any application or problem. "This gives users a warm, fuzzy feeling at the touch of a button. And believe it or not, they don't abuse it," Perez says.

Another way network managers can enhance the comfort level of end users is to sponsor training classes, says Steve Stein, director of Strategies for Microcomputers and Office Systems, an end-user service of market research firm International Data Corp. in Framingham, Mass. It is crucial to stress the basics, explaining how the network functions and what it can do for users, he says. "I've never had a situation where users did not want to work on a LAN after a training class," claims Stein, a former information center manager.

These sessions should be used not only to teach people about the network but also to inform network managers about problems that occur. Consistent complaints in the sessions or user questionnaires indicate mistakes in network implementation that need correcting.

Although the situation is changing, to date many networks have been installed by individual departments without much regard to corporate designs. As a result, corporate information center managers are trying to reestablish control over networking. Stein says these efforts should be encouraged, although they too often result in excessive politics regarding ownership of the network. In such battles, the end user is caught in the middle as each group points the finger of responsibility at the other, Stein says. He asserts that the centralized approach to networking is preferable. With decentralized network control, the person responsible must be a jack-of-all-trades. However, network growth or access to the host requires the specialized expertise of the central information systems managers.

This notion does not give information center management the right to ignore the user, however. "Support and training is the most important element in making network administration work," Stein says. "The technology stuff — choosing the right box — is easy. Information center managers have to listen to the users because they are the ones who make the network a success."

Contrary to what many believe, networks can enhance the security of user applications and data. Not only can a network provide redundancy, it can help prevent intrusion. Diskless PCs supplemented by nightly backup of network files is another form of security, Perez points out. As Shows says, "No one can walk up to a PC and take data."

No network installation is perfect. Users will always find something to complain about. But, according to Perez, the people who complain the most before a LAN installation can become the happiest users, once they actually get onto the network and experience what it can do for their productivity.

Brenner is editor-in-chief of "LAN Magazine" and author of the book *OS/2 LANs*.

The human side of LANs

The following are among the methods LAN managers employ to make the transition to LANs more palatable to users

- ☑ Standardized PC application software
- ☑ A front-end menu system to mask network commands
- ☑ Easy-to-use E-mail
- ☑ Groupware scheduling packages
- ☑ Network-oriented development tools
- ☑ A basic user's guide to the LAN
- ☑ A menu item for calling the Help desk
- ☑ Utilities for Help desk control of PCs
- ☑ Basic classes in network use
- ☑ Centralized control of networks
- ☑ Daily backup and redundant storage
- ☑ An easy-to-use database

CW CHART FRANK C. O'DONNELL

No more net-moving blues

The inconvenience of moving networked computer users often presents a barrier to the installation of a local-area network.

IS managers fear the network will restrict the movement of personal computers, printers, terminals and, therefore, end users. They are concerned that the network will dictate how people must work, instead of people dictating how the network will work.

These worries can be alleviated with the correct network cabling architecture. A centralized cabling scheme with universal wall outlets, well-planned wiring closets and spare cable runs can eliminate problems that restrict user movement.

Two years ago, Folsom, Calif.-based Intel Corp. required outside contractors working for three hours at a total cost of $300 in labor and equipment to move a user on the company's large Ethernet LAN. But this won't happen today, says Jim Sevier, facilities engineer in charge of on-site networks at Intel. "We can move an employee in about 10 minutes without the help of outside contractors," he says.

The difference lies with a coherent wiring scheme based on Lattisnet from Synoptics Communications, Inc. in Mountain View, Calif. Lattisnet provides Ethernet functionality over shielded and unshielded twisted-pair cable laid out in a star topology, much like the telephone system.

In fact, Intel is using eight-pair unshielded twisted-pair cable to carry not only Ethernet but also voice, PC-to-mainframe transmissions and PC-to-Digital Equipment Corp. VAX communications. The eight pairs are broken out at the wiring closet to make the needed connections. In the office, a simple wall outlet provides the connections to end-user equipment. Intel also has IBM Type 2 shielded twisted-pair cable in the walls, which is supported by Lattisnet.

"Unshielded wiring is much easier to work with due to the fact that we have a separate [telephone type] 66 block," Sevier says. All the connections are already made between the 66 block and the Lattisnet concentrator.

Lattisnet cost Intel about $550 per connection, slightly more than the old Ethernet. However, Sevier says, the amount of time saved in managing and troubleshooting over the last two years has more than offset the added cost.

Synoptics is not the only network vendor to learn the lessons of the telephone system's star topology. Other vendors, including Ungermann-Bass, Inc. in Santa Clara, Calif., and Cabletron Systems, Inc., in East Rochester, N.H., offer similar cabling architectures for Ethernet LANs.

AARON BRENNER

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States eye bans on 'junk fax'

BY ELLIS BOOKER
CW STAFF

Connecticut Gov. William A. O'Neill had not been paying much attention to the "anti-junk-fax" bill his legislature passed in May — that is, not until his office facsimile machine was inundated for days with messages urging him to veto the legislation.

That made a difference. The governor signed the bill into law and credited the fax-fancying lobbyists with convincing him that the law was needed.

Fax is now a fact of life in the U.S. Americans own 2.5 million facsimile machines and will send each other a whopping 30 billion pages of information this year, according to the Philadelphia-based American Facsimile Association (AFA). While not a new technology — the first patent for an analog facsimile device was issued in 1841 — fax now accounts for half of all the electronic messages sent in the U.S., according to Framingham, Mass.-based market research firm International Data Corp.

Expensive junk

But dozens of state legislatures are considering measures to curb what has been branded "junk fax," increasingly common advertisements for everything from paper products to vacation tours that arrive unannounced and, to some, unwelcome. Unlike junk mail, junk faxes force the receiver to incur costs related to paper and the lost use of their machine.

Last month, Maryland joined Connecticut and placed laws regulating junk fax on the books. Similar bills are pending in New York and Illinois, and another 21 states are considering some form of legislation.

The states generally define "junk" as faxes that are promotional or fund-raising in nature that the recipient has not given the sender permission to transmit or for which there is no previous business relationship between sender and receiver.

Fines are stiff, too. In Connecticut and Maryland, for example, violators can be fined up to $1,000. New York has taken a more measured response: Its bill merely limits the number of pages of an unsolicited fax and the hours during the day these can be sent.

Action also seems likely at the federal level, where a bill sponsored by Rep. Edward J. Markey (D.-Mass.), chairman of the House Subcommittee on Telecommunications and Finance, is moving through the committee.

'Let it mature'

Is the fax fuss warranted? Not surprisingly, industry groups say no.

"We don't like any kind of legislation. We don't think it's necessary," declared Donna Murdoch, executive director of the 4,000-member AFA. Such supporters of fax marketing argue that a ban on unsolicited faxes is an infringement on the right to free speech. They also complain that fax has obvious and appealing uses as a marketing tool and should not be legislated before the marketplace explores all of its applications.

But lawmakers distinguish junk fax from its older cousin junk mail by pointing out that a fax machine is rendered useless for transmitting or receiving while it is processing an unwanted message.

As Markey put it in introducing his Facsimile Advertising Regulation Act of 1989, "... unsolicited advertising is beginning to clog fax lines, restricting the owner's ability to use their machines for the purposes they originally bought them for."

Introduced in May, the Markey bill will likely combine with two existing measures proposing regulations on the use of autodialed recorded message players (ADRMP) — computers that dial a number from a database and then play a prerecorded announcement — and will amend the 1934 Communications Act and give the Federal Communications Commission enforcement oversight.

The FCC involvement is significant because it would address interstate junk faxes, which the individual states cannot prevent.

Markey proposed a national "do not call" on-line database, which would list the phone and fax numbers of consumers and businesses that do not want to be included in fax and ADRMP directories. Marketeers would be required to consult the list before placing calls. However, essential details about the database — how it would be structured and who would maintain it — have yet be worked out.

"We're concerned about any measure for a 'do not call list' because of the difficulty in maintaining and updating it," said Margaret Gottlieb, director of state government affairs for the Direct Marketing Association, a Washington, D.C. trade group.

The AFA's Murdoch disputes Markey's charges. She said marketeers who use the fax — actually, a fax board in a personal computer that automatically dials numbers from a database — generally transmit their ads after 11 p.m., when long-distance rates are lowest and thus do not interrupt normal business faxes. Responsible companies, she added, keep their advertisements to a third of a page and provide an 800 number for consumers to call if they do not wish to receive future promotional materials.

"The industry will police itself if and when [unsolicited faxing] becomes a problem," Murdoch concluded.

Hot off the fax

While federal and state legislators are proposing restrictions on unsolicited fax transmissions, new and imaginative uses of the technology keep popping up.

A good example of the positive use of fax is a service from *The Hartford Courant*. For $1,000 per year, subscribers get a summary of the newspaper's next-day coverage faxed to their home or office. Bill Williams, assistant to the publisher, said the paper is one legal sheet in length, with the emphasis on business news. Transmitted five days a week before 5 p.m., the synopsis includes summaries of sports, entertainment and the closing stock prices of major local companies.

Although most subscribers live in the state — Williams declined to say how many people have signed up for the 3-month-old service — a few are from outside Connecticut. One of these is an insurance company that likes to keep close tabs on Hartford, the mecca of the insurance industry.

"We're getting into an area that will only grow; it won't go away," said Williams, who predicted that other newspapers will start their fax editions in the near future.

ELLIS BOOKER

NEW DEALS

Vets get benefits network

The Department of Veteran Affairs has awarded an $84 million, 10-year contract to **Science Applications International Corp. (SAIC), U.S. Sprint Communications Co.** and Sprint subsidiary **Telenet Communications Corp.** The deal concerns a private network that will transmit information about benefit programs to veterans. Sprint and Telenet will provide the customer-premise equipment, transmission facilities and field support. As prime contractor, SAIC will provide systems integration, tailored software and tele-management.

New York Life Insurance Co. awarded a contract to Framingham, Mass., network vendor **The Info Group** for a cost-control and allocation and network-analysis system for the insurance provider's nationwide telecommunications network.

GE Information Systems won a one-year contract, with two option years, from the **General Services Administration (GSA)** to provide electronic data interchange services to the GSA/Federal Supply Service.

Booker

FROM PAGE 47

without some agreed-upon standards for the latter, compatibility (read, compatibility with IBM's Token-Ring) among 802.5-based products from other vendors will continue to be an issue.

Cheryl Currid, manager of departmental computing services at Coca-Cola Foods and one of the user/presenters at the OTF meeting in St. Louis, reasoned that IBM should join OTF because Token-Ring is not now the dominant LAN approach. IBM, she said, cannot topple Ethernet all alone. "The incentive for IBM is not the battle; it's the war," Currid said.

But back to the alleged business of OTF, which Madge bravely said would continue with or without IBM.

The question is, who is now being inconvenienced by Token-Ring compatibility problems? Is it the users, the vast majority of whom are using IBM Token-Ring products? Or is it Token-Ring board-makers that are having trouble getting their products to work with IBM hardware?

A vendor that attended the OTF meeting but is not one of the 30 or so OTF members said he suspected the latter are the ones with the most to gain from OTF. He claimed his company, which makes its own processors as well as Token-Ring interface cards, has had "no trouble" with the 802.5 LAN standard on the network side of the interface.

Coy on reasons

On the other hand, I have to agree with Madge, who described IBM's explanations for not joining OTF as "somewhat coy." When IBM, Digital Equipment Corp. or Apple Computer, Inc. are asked to join an "open" standards group like OTF and when these companies, for one reason or another, do not believe joining is in their immediate strategic interest, they typically claim not to have the resources to devote to the group and innocently explain that they already belong to many other standards bodies and want to avoid duplication of effort and overlap. IBM has offered the latter explanation in declining to join OTF.

Still, large players do join user-sponsored standards groups when the pressure to do so is sufficient. For instance, after a year of sitting on the fence, IBM said last month it would consider joining the 70-member OSI/Network Management Forum (NMF), provided the group modifies an intellectual rights clause in its bylaws.

A comparison between the OSI/NMF and OTF, which have similar goals, is instructive. Both say they do not plan to set standards and will leave this to international bodies such as the International Standards Organization and IEEE, respectively. They say they intend to develop industrywide agreement on methods to permit interoperability between equipment from different vendors.

However — and this is key — whereas there is no dominant network management supplier, the Token-Ring LAN market is undeniably in IBM's back pocket. So while IBM has a strategic rationale for joining OSI/NMF, no such push exists for its participation in OTF.

Is OTF viable without IBM? In my mind, the jury is still out. Obviously, the group must sign up as many Token-Ring users as possible. The original charter calls for a vendor and user group, and without users, there is little incentive for IBM to join. The St. Louis meeting, which attracted about 35 attendees, was packed with vendors but only a handful of users.

A litmus test for OTF's future may be its interoperability demonstration of 802.5-based products, scheduled to coincide with Novell's Networld89 show in September in Dallas. The event should show how far the non-IBM Token-Ring industry, such as it is, has come and how far it needs to go and whether OTF can be its standards-bearer in the shadow of IBM.

Booker is *Computerworld's* Chicago correspondent.

At this point, it's hard to tell which end of the system is in charge.

Systems managers once held complete control over all computers. Now, PCs and workstations are everywhere, with their users howling for mainframe access.

Since MIS/DP won't play dead, and users hate to beg, Network Systems introduces a solution: LAN II.™

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NEW PRODUCTS

Gateways/ Bridges

AT&T has announced several Integrated Services Digital Network (ISDN) applications and product enhancements.

The company unveiled plans for two hardware and software packages that reportedly enable private branch exchanges (PBX) and computers to share data from the same network. The ISDN Gateway software works with AT&T 3B computers to link an application on the customer's host computer, the vendor said. The Integrated Telemarketing Gateway reportedly connects an AT&T Definity Generic 2 or an AT&T System 85 Advanced Networking switch with application software on a host computer to improve call center operations.

Audix Enhanced III was also announced, an enhanced version of the company's Audio Information Exchange (Audix) voice-mail system that now includes integration with the electronic mail system and additional security functions. It is priced from $40,000 to $230,000, depending on size and features.

AT&T
National Product Center
1 Speedwell Ave.
Morristown, N.J. 07960
800-247-1212

Being your best — It means taking pride in what you do. Expanding your horizons. And making the right decisions. NetWorld 89 Dallas gives you all the resources to be your best, because only NetWorld brings together the entire connectivity industry — from AT&T to IBM to Novell to Sun/Tops to Zenith. And this year we've expanded the renowned NetWorld Seminar Series with an extra day; beginning on Monday, September 11, you'll hear from hundreds of industry leaders on topics covering the entire connectivity spectrum. And then from Tuesday to Thursday, consider hundreds of products and services on the sold-out exhibit floor. *You deserve the best. NetWorld.*

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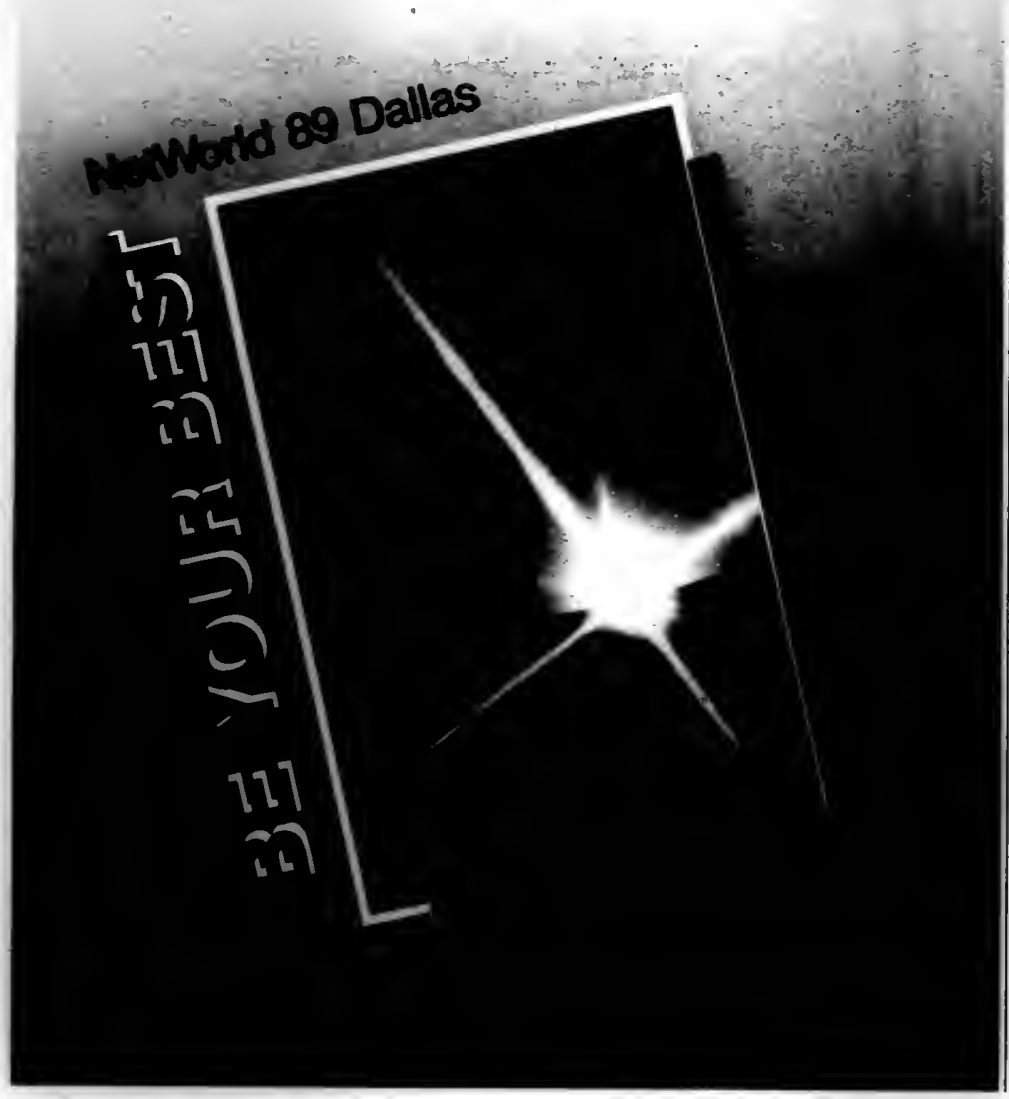

Vitalink Communications Corp. has announced a midrange bridge developed specifically for token-ring networks.

The Transring 530 is a protocol-transparent remote bridge that connects multiple IBM Token-Ring (IEEE 802.5) local-area networks into an integrated wide-area network based on IEEE and ISO standards, the company said. The product reportedly provides support for as many as four remote links at speeds up to 64K bit/sec. in single, parallel or full-mesh link configurations. It is priced at $15,750.

Vitalink Communications
6607 Kaiser Drive
Fremont, Calif. 94555
415-794-1100

Wang Laboratories, Inc. has introduced gateways said to connect personal computer users and enable them to exchange information over local-area networks and across Wang VS minicomputer-based networks.

The Interlan Gateway and VS Gateway are the latest additions to Wang's 1-year-old LAN Office product line and were designed to connect remote and/or incompatible LANs, Wang said.

The gateways also serve to better integrate Banyan Systems, Inc.'s Vines network software — which Wang now remarkets — into VS systems.

Available in the second quarter, the Interlan Gateway and VS Gateway are each licensed for $995 per server.

LAN Office is licensed separately at a price of $795 per server.

Wang Laboratories
One Industrial Ave.
Lowell, Mass. 01851
508-967-1523

Lanex Corp. has expanded its Lanexpress family of Ethernet component products with the addition of the Multiple Bridge Analysis System (MBA8023).

According to the company, the product was designed in order to be consistent with the IEEE 802.1 (D) proposed standard and operates from a single node on a bridged local-area network.

MBA8023 reportedly controls the company's Local and Remote Ethernet Bridges, as well as any other vendor bridge that meets the proposed IEEE 802.1 (D) standard.

The product is available in two models: the MBA8023/Sys, which includes all hardware and software, and the MBA-8023/Lic, which provides the software and Ethernet card to be incorporated in customer supplied hardware.

Pricing is set at $7,995 for the MBA8023/Sys and $4,995 for the MBA8023/Lic.

Lanex
10727 Tucker St.
Beltsville, Md. 20705
800-595-4700

Local-area networking hardware

A local-area network system using fiber-optic IEEE 802.3 Ethernet technology has been introduced by Zenith Electronics Corp.

The Z-LAN10F Fiberstar system reportedly builds the fiber-optic transceiver on the adapter card, requiring no external transceivers or interfaces. The system is said to provide 10M bit/sec. Ethernet services with 100% collision detection and is capable of spanning 4 km on a single network without magnetic or radio interference from outside electrical sources.

According to Zenith, the system consists of an adapter card, which sells for $895; a hub coupler that connects eight or 14 devices, selling for $4,175 and $5,975, respectively; and an external Attachment Unit Interface transceiver to allow connectivity with other Ethernet networks, priced at $595.

Zenith Electronics
1000 Milwaukee Ave.
Glenview, Ill. 60025
312-391-8000

An eight-bit Ethernet network interface adapter has been introduced by Tiara Computer Systems, Inc.

The Lancard/E PC Twisted Pair card reportedly combines the Fujitsu Microelectronics, Inc. Etherstar local-area network controller chip with Synoptic, Inc.'s Lattisnet unshielded twisted-pair technology. The board transfers Ethernet traffic through basic unshielded telephone cabling and was designed for IBM Personal Computers and compatible systems, the company said. It is priced at $395; deliveries were scheduled to begin in June.

Tiara Computer Systems
2700 Garcia Ave.
Mountain View, Calif. 94043
415-965-1700

Network services

A satellite-based digital private line service for business customers has been announced by AT&T.

Called AT&T Skynet Direct Service, the service reportedly uses earth station equipment to transmit between two customer locations at data speeds ranging from 56K bit/sec. to 1.544M bit/sec.

Operating in the Ku band of the radio frequency spectrum, the transmissions are available within the contiguous U.S. Implementation is expected to occur in the fourth quarter, the company said.

According to AT&T, the service will be engineered to meet individual users' needs and may cost $2,300 per month for 56K bit/sec. service between two customer locations, with satellite pricing unaffected by the length of the circuit.

AT&T
295 N. Maple Ave.
Basking Ridge, N.J. 07920
800-247-1212

Anterior Technology has announced communications and information services aimed at moderating and filtering the information flow of Usenet news groups and Internet mailing lists.

A dedicated Mips Computer Systems, Inc. M1000 computer system serves as the nexus for the In Moderation Network, communicating with member sites via the Internet with Transmission Control Protocol/Internet Protocol or on a dial-up basis with UUCP at 19.2K, 2,400 or 1,200 bit/sec.

According to the company, material may be received by arranging a feed from an existing member or by connecting directly with Anterior Technology for a charge of $35 per month and $3 per hour.

Anterior Technology
P.O. Box 1206
Menlo Park, Calif. 94026-1206
415-328-5615

Modems

Two desktop 9,600 bit/sec. modems have been announced by General Datacomm, Inc.

The Desktop 9600 RPA and the Desktop V.29 RPA employ 19.5-ms rapid polling for improved throughput in multipoint applications, the vendor said. Each unit also includes automatic adaptive equalizers. The devices are priced at $1,595 apiece.

General Datacomm
1579 Straits Turnpike
Middlebury, Conn. 06762
203-574-1118

A V.32/22 bis modem that provides monitoring, testing and control for multiple modem systems has been announced by NEC America, Inc.

The N9635 offers a removable module for diagnostics and configuration as well as a module that can be modified as modem standards evolve, the vendor said. The product also provides 19.2K bit/sec. speeds via internal MNP Class 5 Data Compression. The N9635 is priced from $1,495 to $1,595, depending on module options.

The company has also unveiled the N9631 V.32/22bis modem, a second-generation device designed to give users compatibility with 4.8K and 9.6K bit/sec. V.32 standards, as well as with existing 300 to 2,400 bit/sec. modems. Scheduled to ship in January, the N9631 will cost less than $1,000.

NEC, Data and Video Communications Systems Division
110 Rio Robles
San Jose, Calif. 95134
408-433-1250

"Ok, maybe fiber is the medium of the future, but I need to wire my new facility today.

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MANAGER'S JOURNAL

EXECUTIVE TRACK

William I. Ledman was promoted to vice-president of systems and data processing at **GEICO Corp.**, an insurance company based in Washington, D.C. He previously served as assistant vice-president. Ledman replaces James E. Hitt, who was named senior vice-president of GEICO affiliate GEICO Indemnity Co.

Ledman, 40, joined GEICO in 1974 as an applications programmer/analyst, subsequently holding the positions of manager of applications programming, director of applications programming and director of systems software. Before joining GEICO, he was an associate programmer at Chesapeake & Potomac Telephone Co.

Ledman is a *magna cum laude* graduate of the University of Maryland with a bachelor's degree in the humanities.

In other moves at GEICO, **Joann F. Burke** and **Milton E. Moore Jr.** were promoted and named assistant vice-presidents reporting to Ledman. Burke was promoted from director of programming analysis, and Moore was director of computer operations.

Geoffrey A. Gordon has been promoted to business systems manager at **Stanley-Bostitch, Inc.**, the stapling and nailing tools subsidiary of The Stanley Works in East Greenwich, R.I. Gordon, who joined the company in 1981 as a systems analyst, holds an MBA from the University of Rhode Island.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor-Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Smooth landing after a rough ride

Ex-Navy pilot restores order to merged IS operations at Dr. Pepper/Seven-Up

BY WILLIAM BRANDEL
CW STAFF

When John Stevenson took the position of director of MIS at Dr. Pepper/Seven-Up Companies, Inc. in Dallas, the department was in complete disarray, on the heels of a rushed merger between the two companies. But after 18 months with Stevenson at the helm, the once chaotic IS group is charging upfield as if it were led by one of Stevenson's fellow U.S. Navy veterans — coolheaded former Dallas Cowboys quarterback Roger Staubach.

In 1987, the two soft-drink companies merged after two attempted hostile takeovers of Dr. Pepper from soda giants The Coca-Cola Co. and Pepsico, Inc. The job of merging two completely different IS groups while soothing the wounds opened during an aborted takeover attempt is not exactly standard fare for a new IS director. But Stevenson, 39, is not exactly your typical IS director.

Stevenson was an officer in the U.S. Navy and during the Vietnam War, flew missions from aircraft carrier-based Tomcat fighter jets. The war is over and the carriers are far from Texas, but he still flies the jets on weekends.

"It's a great stress release," Stevenson says about the weekend maneuver exercises.

Stevenson spends most of his efforts during the week maneuvering with different engines — IBM 3090 mainframes and Digital Equipment Corp. VAX minicomputers. But his naval training is still evident. Stevenson's IS department is spotless, and his staff reflects his own image: clean-cut, professional and polite.

Continued on page 60

PROFILE: John Stevenson

STAR WOLENSKI

Position: *Director of management information systems, Dr. Pepper/Seven-Up Companies*
Mission: *To speed systems development responsiveness while maintaining high end-user support levels from two companies' merged IS departments*

Study: Bell breakup takes toll on IS

BY MITCH BETTS
CW STAFF

Customers were not the only ones confused by the breakup of the Bell System monopoly five years ago. Information systems managers at the 22 divested Bell operating companies were too, according to a recent study by Touche Ross & Co. consultants.

"They weren't sure how to organize, what to do to support the business or how much to spend" in the newly competitive environment, noted the report by Thomas H. Slaight, a partner based in New York, and Robert L. Andrews, based in Stamford, Conn. Before divestiture, all of those IS decisions were made by Ma Bell — AT&T headquarters and Bell Laboratories.

One result of this shakeup is that the telephone industry's internal information systems are behind the times compared with other service industries in terms of using IS to implement business strategies, said the study, titled "Information Management in the Telephone Industry — Can it Measure Up?"

The local telecommunications "industry is only now beginning to develop systems that will enable the strategic use of information, particularly in the product management area," the report said.

Furthermore, Touche Ross reported that the IS function in the telephone industry costs much more than in other industries, with total IS costs for a typical company estimated at 5.5% of revenue.

Now, IS managers are under pressure from regulators, competitors and their peers to make the IS function more efficient and to integrate information management with the business planning processes, the study said.

This may be good news for IS managers, who are emerging as powerful players inside the local telephone companies, the report continued. They are being asked to take over internal telecommunications networks and, more importantly, blend IS with the carrier's network operations.

The challenge

The IS manager's challenge is to shift the IS focus from purely internal support to external, market-driven activity, the consultants said.

For example, the telephone companies will have to revamp their traditional, batch-oriented billing systems to meet increasing customer demands for more sophisticated billing services.

Slaight and Andrews concluded that, for well-managed telephone companies, these dramatic changes in the IS function could lead to lower costs, more efficient use of resources and a competitive advantage.

IN A WORLD FIGHTING OBSOLESCENCE, MERIDIAN SL-1 OWNERS HAVE LONG SINCE WON THE WAR.

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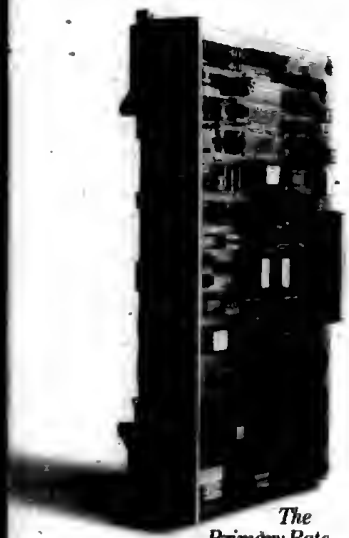

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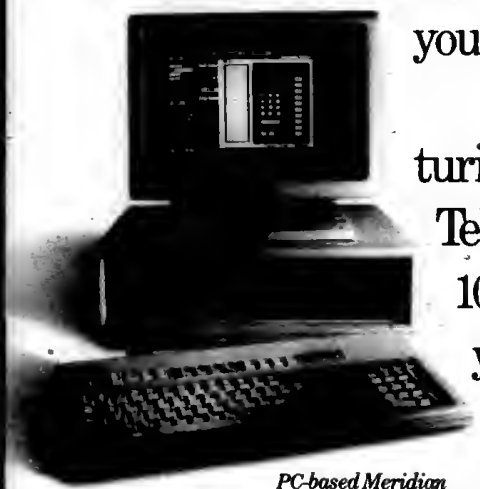

PC-based Meridian Manager simplifies station administration, traffic reporting, and work order entry.

What's more, designing and manufacturing communications systems is Northern Telecom's main business—as it has been for 105 years. So it's no surprise that again this year, surveys show that people who own Northern Telecom PBXs are the most satisfied of all.

So if you want a PBX with a future, call 1-800-328-8800. With a Meridian SL-1, victory will be yours at last.

NORTHERN TELECOM

THE POWER BEHIND NETWORKING™

Stevenson

FROM PAGE 57

Wayne Bell, manager of the Dr. Pepper/Seven-Up data center, says that Stevenson's leadership qualities were critical in resolving the post-merger tensions in the IS department. "You have to be a diplomat and make sure no one's offended, and he's good at that," Bell says. "He's not your typical DP guy. He's a freethinker who's able to deal with all types of people. He works as well with senior management as with operators."

The combined Dr. Pepper/Seven-Up IS budget is now about half of Dr. Pepper's former IS budget alone, while the department's productivity has multiplied.

"When you have to support two groups that have completely different approaches to and images of their product, it gets complex," Stevenson says. "When I first arrived here, we'd get two to three calls minimum every night for technical support. Now we get less than one phone call every two to three days." Stevenson says user disruption is 20% of what it was a year ago, quantified in hours of downtime and missing reports.

Bell agrees. "We're getting 30% more work through the system and reaching a lot of our goals," he says. "Before, we seemed to be floundering around."

The systems that have achieved these gains are not state of the art — in fact, Stevenson prefers to buy used equipment because it is more cost-effective and has a less severe obsolescence cycle. The key to keeping users happy is not technology but people.

"I tell my staff that although we have hundreds of users on the mainframe while we only have 20-something on the VAX, you have to understand both and spend just as much time with each," Stevenson says emphatically. "If they don't and I catch them, they won't work here. Our users need our support people to answer their questions, whatever they are, whenever they ask."

Marketing means everything in the brutally competitive beverage industry, demanding increasingly speedy response to consumer preferences and the advertising gambits of rival companies. All of this puts unprecedented demands on information technology, according to Stevenson.

"Look at what happened when Diet Coke came out with an ad that said Pepsi lost X amount of market share to Diet Coke," Stevenson says. "Three weeks later Pepsi comes out with a megamillion-dollar ad blitz saying, 'You're all wet. We lost market share to another Pepsi product.' Just three to four years ago, that kind of response at that level of sophistication could not have happened."

Stevenson candidly admits that as the No. 3 soft-drink company behind the two cola giants, Dr. Pepper/Seven-Up is not where it needs to be in system responsiveness.

Out of step

"My Achilles' heel is not having applications as in tune with certain sections of the company in 1989 and beyond," he says. "Our older applications were designed to support the company as long ago as 1982 to 1984. But things are turning faster now. If I don't have applications that can turn faster than a battleship, then every time I build something, we're going to be obsolete halfway through the life cycle of that application."

Stevenson says he has drawn on the communication skills of his family and the managing style of his superior naval officers.

"In the Navy in the late '60s and early '70s, there were few senior officers with 10 to 15 years of military experience, which I equate with business experience," he says.

"You have to see from the end of your nose all the way out to the horizon and never lose sight of any plane," he said. "If you don't think in all directions, you will not be successful at the executive level. Those themes are what carried me to where I am as a young person in an MIS organization.

"We are an average to good shop today," he concludes. "At this time next year, I want to be a good to excellent shop."

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  VP, Applications Systems Div.
  IBM Corporation
  SAA Partnerships: Solution Creation and Implementation
- Thomas E. Furey, Jr.
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  IBM Santa Teresa Laboratory
  SAA and the Application Development Environment
- Susan Whitney
  Director of SAA Marketing
  IBM Corporation
  SAA — IBM's Blueprint for the 1990s
- Frank H. Dodge
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TAKING CHARGE

Les Gilliam

Don't neglect the long term

Many information systems managers allow themselves to be so closely tied to day-to-day problems that they might choose not to do any long-range planning if they were not required to do so. But it is beneficial for the IS manager to be forced, at least once a year, to back away and take a look at the needs and opportunities the IS function will be facing.

The IS manager should first understand the difference between strategy and tactics. It may help to make this distinction by using the analogy of a military commander. In this case, strategy is the science of planning and directing large-scale military operations by maneuvering forces into the most advantageous position possible prior to actual engagement with the enemy. Tactics is the science of arranging and maneuvering military forces in action against the enemy. In other words, strategy has long-range objectives; tactics have short-range objectives.

Although it is often difficult to break from the past and find a new way of thinking about IS, a good strategist will tend to be one with vision for the organization who is capable of innovative thinking.

For example, there is at least one major U.S. corporation — and probably others — whose central IS shop submits competitive bids to the users for application development projects. These are fixed-price bids with a money-back guarantee if the system does not meet requirements or is not delivered on time. How'a that for innovative thinking?

I would guess that such an arrangement requires a proven methodology; outstanding people; and excellent planning, development and measurement tools and techniques — plus undaunted confidence and maybe a large nest egg for early retirement.

What issues are IS managers wrestling with these days as they try to develop a long-range strategy for the IS area? The following topics seem to be high on the list.

• **Bottom-line contribution.** The typical IS manager may be developing an inferiority complex because of the publicity about systems at American Airlines, American Hospital Supply or McKesson contributing significantly to the bottom line. Yet consultant Toby Choate of Arthur D. Little was recently quoted as saying, "Companies can get a competitive edge by doing the basic business things — the nuts and bolts — better."

The IS manager may very well be in the best position of any manager to develop a strategy for maximizing the competitive value of information and technology for the firm.

• **Architecture standards and resource distribution.** Most IS managers have been faced with the challenge of how to control the proliferation of personal and/or minicomputers in the company. Now, the issue is how to manage the growth of local-area networks and maintain compatibility.

Some organizations have addressed the issue by establishing standards such as approved vendors, architectures, operating systems, software, telecommunications resources, etc. But the basic need is for a strategy that addresses centralized vs. departmental vs. personal computing and examines how to tie them all together in a compatible, controllable and cost-effective manner.

• **Telecommunications.** Corporations will have difficulty staying competitive in the future if they do not have adequate telecom resources to serve the voice, data and facsimile needs of the company. There are some major firms who still do not have voice and data telecommunications merged under one management.

• **A stronger IS management team.** Perhaps the one major subject that keeps IS managers awake at night is concern about the IS management team's weaknesses. Now is the time to develop long-range plans for organizational changes, further training or cross-training, or new hires to bring about the needed improvements.

• **Applications development.** Of all the problems we hear about in the field of computing, perhaps the most prevalent pertains to the development of applications. The strategy needs to include such topics as hiring practices, pay scales, training programs, project management methods, selection and use of standard tools and client relations.

• **EIS/ESS.** Every IS manager would do well to learn as much as possible about executive information systems or executive support systems before the chief executive officer calls up and wants one, quick. Going on the offensive by developing a strategy to meet the information needs of senior management will pay great dividends and avoid a catastrophe.

• **Security.** Lastly, a strategy is needed to determine the risks, solutions and cost of those solutions regarding the security of the corporate information resources.

Gilliam is president of Gilliam Associates, a computer management consulting firm based in Ponca City, Okla.

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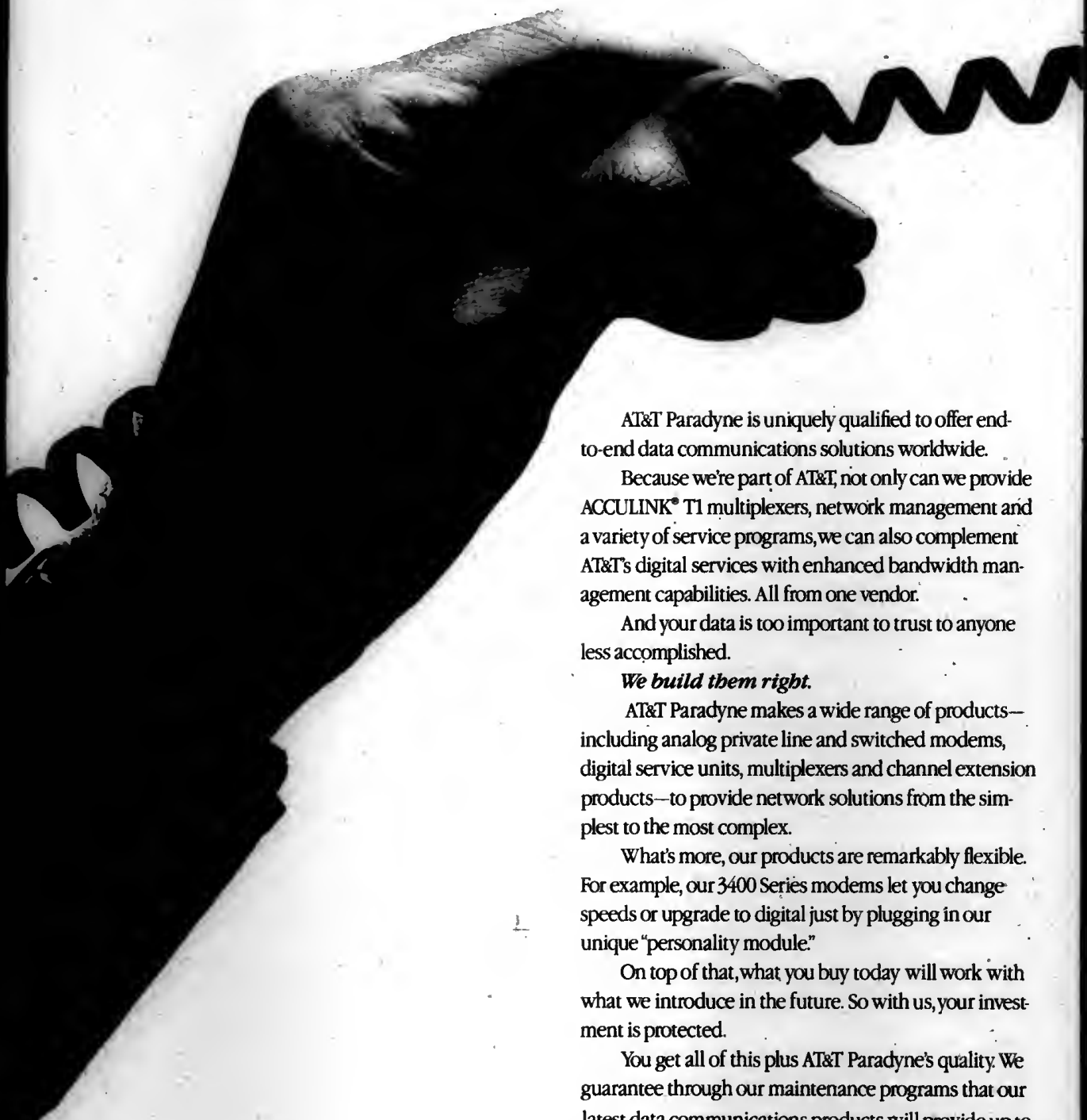

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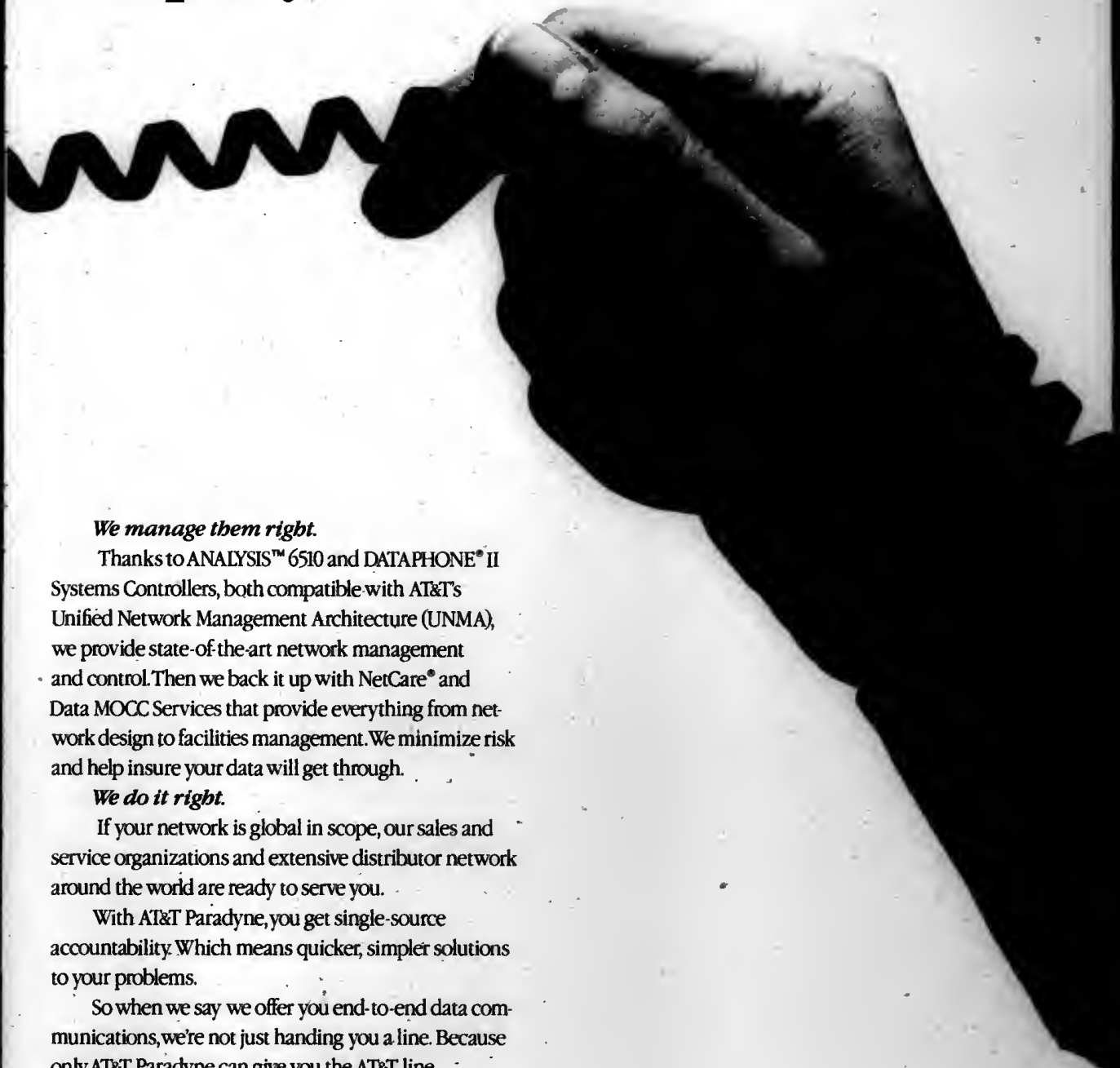

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CALENDAR

Bar coding, voice recognition, automatic number identification, facsimile-to-personal computer links, graphical interfaces and optical character recognition are some of the technologies that will be explored at an upcoming Institute for International Research, Inc. conference. The two-day program, "Data Capture Technologies: Cost-Effective Alternatives to the Keyboard," will be held in Cambridge, Mass., Aug. 21-22. Fifteen speakers from information systems departments, research fields, publishing and vendors will address the area of data capture and input problems. Issues will include hardware installation and implementation, software interfaces and future technological developments.

For more information, contact Georgette Asherman, Institute for International Research — Information Technology Division, 331 Madison Ave., New York, N.Y. 10017.

JULY 23-29

Sun Expo '89. Santa Clara, Calif., July 23-25 — Contact: Sun Expo '89, 12416 Hymeadow Drive, Austin, Texas 78750.

Information Center Conference and Expo. Anaheim, Calif., July 23-27 — Contact: Martha Eversley, Conference Registrar, Weingarten Publications, 38 Chauncy St., Boston, Mass. 02111.

Just-in-Time Seminar. Washington, D.C., July 24-26 — Contact: American Production and Inventory Control Society, 500 W. Annandale Road, Falls Church, Va. 22046-4274.

Summer Institute in Supercomputing. Ithaca, N.Y., July 24-Aug. 4 — Contact: Donna Smith, Conference Coordinator, Cornell National Supercomputer Facility, Summer Institute, Campus Road and Central Ave., Ithaca, N.Y. 14853-8301.

IS Management Seminar. Boston, July 25 — Contact: Legent Corp., 2 Allegheny Center, Pittsburgh, Pa. 15212.

Spardatech: The Imminent Collision Between Powerful Workstations and Lower Cost PCs Conference. San Francisco, July 25-26 — Contact: The Yankee Group, 200 Portland St., Boston, Mass. 02114.

Computer Security Conference. Washington, D.C., July 26-28 — Contact: Digital Consulting, 6 Windsor St., Andover, Mass. 01810.

JULY 30-AUG. 4

Database '89 Program. San Francisco, July 31-Aug. 2 — Contact: Digital Consulting, 6 Windsor St., Andover, Mass., 01810.

Financial Management for Data Processing Annual Conference. Philadelphia, July 31-Aug. 2 — Contact: Financial Management for Data Processing, P.O. Box 27543, San Francisco, Calif. 94127.

Comdex/Asia Pacific '89. Sydney, Australia, Aug. 1-3 — Contact: The Interface Group, 300 First Ave., Needham, Mass. 02194.

Systems Integration: Market Directions and Strategies, 1989-1993. New York, Aug. 1-3 — Contact: CMP Publications, 600 Community Drive, Manhasset, N.Y. 11030.

Telestrategies Conference: Fiber Metropolitan-Area Networks and Local-Area Networks. Washington, D.C., Aug. 2-3 — Contact: Telestrategies, Suite 100, 1355 Beverly Road, McLean, Va. 22101.

Evolution of DB2 Seminar. Dallas, Aug. 3 — Contact: Forrest Ford Consultants, Suite 575, 1425 Greenway Drive, Irving, Texas 75038.

AUG. 6-12

International DB2 User Group Conference. Chicago, Aug. 6-9 — Contact: IDUG, Suite 600, 111 E. Wacker Drive, Chicago, Ill. 60601.

Executive Communications and Support. Wellesley, Mass., Aug. 6-9 — Contact: The Institute of Management Sciences, 290 Westminster St., Providence, R.I. 02903.

Urban and Regional Information Systems Association (URISA) Annual Conference. Boston, Aug. 6-10 — Contact: URISA, 310 C St., S.E., Washington, D.C. 20003.

Conference on Finance and Accounting for the Non-Financial Executive. Lowell, Mass., Aug. 7-8 — Contact: Andrea Shear, Boston University Seminar Coordination Office, 44 Commercial Wharf, Boston, Mass. 02110.

APL89, The Annual International Conference on APL. New York, Aug. 7-10 — Contact: APL89, P.O. Box 4368 GCS, New York, N.Y. 10163.

CADD Production Management. Durango, Colo., Aug. 7-11 — Contact: Philip Bennett, Department of Engineering Professional Development, University of Wisconsin-Madison, 432 N. Lake St., Madison, Wis. 53706.

ACM Ada Conference. Ottawa, Ont., Canada, Aug. 6-11 — Contact: Kathy Mahoney, Ottawa Carleton Research Institute, Suite 204, 300 March Road, Kanata, Ont., Canada K2K 2E2.

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Cost-cutting, revisited

While often overlooked, improving developer productivity is a good option

BY FRANCIS P. McGUFF

In his book, *Management: Tasks, Responsibilities, Practices,* Peter Drucker notes that moving to the future is primarily a matter of sloughing off the past. The ingrained mentality of "we've always done it that way" and the reluctance of staff members to learn new techniques must be handled carefully, with planning, control and forethought.

It is widely accepted that 70% of the industry leaders of one technological generation fail to make it to the next. This may also be true of your staff. Nevertheless, one of the greatest challenges information systems management faces in the 1990s will be improving the effectiveness with which you deliver the systems. Any of a number of approaches could prove beneficial to your organization.

One method available today is the reduction or containment of the costs of developing and maintaining systems. Although this aim can be achieved in many ways, one clearly measurable method lies in improving developer productivity.

But how does IS measure developer productivity? The first step in answering this question is to determine current productivity and its costs. There are a few simple, broad metrics that can help IS focus on areas that can be improved and identify cost-effective ways to achieve those improvements.

After you develop a means of analyzing productivity and cost, you can then review the trade-offs of increasing productivity vs. reducing costs. As both of these measures will require increased short-term expenditures — and because today's corporate management may not view such expenditures in a favorable light — you may then want to consider how to achieve similar ends by shifting budgetary resources.

Once you have established what your current costs are, you can consider two different approaches for improving productivity: implementing computer-aided software engineering (CASE) products or switching development languages. Both of these approaches have received a great deal of attention in the industry press over the last several years, and both have the potential for improving the development process.

The first step to take in reducing development costs is to figure out how to measure them accurately. There are three statistics that you can develop to track costs. First, determine the number of salary-days that are available for development and the percent of salary budget allocated for development; second, consider the dollar cost per line of code ($/LOC); and third, calculate the maintenance burden — the number of programmers required to maintain the applications. Once you can accurately measure these costs, you can assess the impact of productivity improvements on $/LOC.

One metric for measuring productivity during the systems development life cycle is lines of code. Although there are many pros and cons for LOC, it provides the least ambiguous measurement. As an alternative, you might use Function Points, which are part of an approach that focuses on functionality rather than raw program size.

To get an idea of how to work through these issues, consider a sample IS organization that has a structure similar to that in the chart (see page 67). Although the figure does not include the cost of staffing and running the computer center — if it did, the calculations would become too complicated for this discussion — these costs should be included when you do your own final analysis.

Allocation of costs should be performed within three areas: development and maintenance of computer applications, operating costs for those applications and the costs associated with running the data center.

Our sample information systems department consists of a total of 178 people, with a salary base of $7,905,000. A benefit rate of 28% brings the encumbered salary costs to $10,118,400. All subsequent salary references will be encumbered.

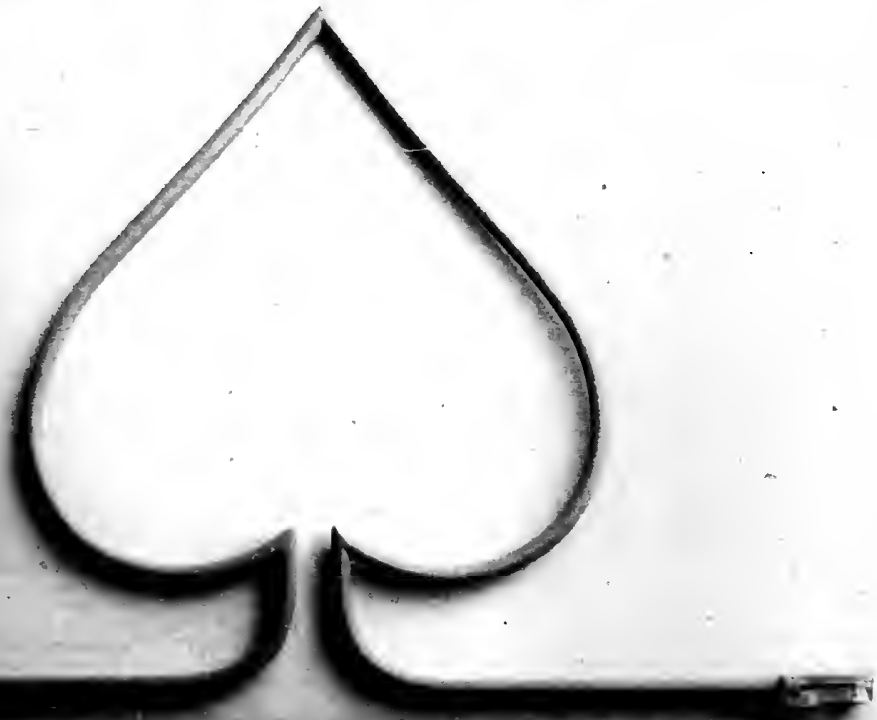
For this organization, there are 178 x 260

McGuff is an independent consultant specializing in information systems management. He is based in Glenview, Ill.

ROBIN JAREAUX

- **Playing the numbers game**
- **Consider CASE — or a new language**
- **Measuring lines of code ain't all bad**

WHY GAMBLE WITH NETWORK RELIABILITY?



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= 46,280 salary-days/year. The 260 salary-days/year available to individual development staff members will be spent on two weeks' vacation; 10 paid holidays every year; and 10 days for training, seminars, user group meetings and so on. Thus, there are a maximum of 126 x 230 = 28,980 development days — the 126 includes the information center and development staff, but not the development center support staff. The actual combined salary of the 126 developers is $7,219,200.

Note that while 71% ($7,219,200 ÷ $10,118,400) of the budget salary goes directly into the development and maintenance process, only 63% (28,980 ÷ 46,280) of the available salary-days are spent on development and maintenance. This imbalance is worse for non-development staff.

Productivity issues

Now that you have some rough ideas as to where the largest percentage of salary is spent, the next step is to determine how many lines of code are produced in a budget year and the costs associated with producing them. Although some of these costs may have been spent over several budget periods, this will even out in the long run. Indeed, bear in mind that this should be an ongoing analysis.

Since your shop develops, maintains and executes computer applications, every dollar spent should clearly be allocated to either development, maintenance or production. Creating additional categories to reduce the dollar amount looks appealing but only serves to hide expenditures.

After these calculations, you will know how efficient your organization is in terms of developing new applications. Remember that this is not a measure of developer productivity but rather a measure of the departmental cost-effectiveness.

The first thing to do to measure developer productivity is to determine the number of lines of code that were released and promoted into production status for the last budget year. This should include all programs that will be placed into maintenance but should not include one-shot utilities for programmer use, test programs and modifications made during the development cycle. Second, determine the cost associated with those programs. Include such items as computer costs, operations costs, management expenses, payroll benefits and training.

An industry standard for productivity is one line of code per hour. However, between meetings and other commitments, you can realistically expect the staff to spend about 80% of their time actually developing. Based upon that, our sample shop will be able to spend about 23,184 productive days/year (80% of 28,980 development days) on system building.

A development life cycle analysis conducted for the sample IS shop shows that it will spend about 54% of the project on programming. The applications programming staff will have about 12,520 (54% of 23,184) programming person-days/year. They should then be able to produce roughly 100,000 LOC/year (one LOC/hour x 8 hours x 12,520) with a resulting salary cost per line of code of about $100 ($10,118,400 ÷ 100,000 LOC).

Now you need to determine the maintenance burden. Since the LOC/year is very difficult to measure for programs in maintenance, try determining the number of programmers required to maintain a specified but arbitrary number of lines of code — for example, 20,000. For each application in production, count the number of lines of application code for all programs that may require maintenance.

Let's say that for our sample shop the maintenance burden for a Cobol system is about 20,000 LOC/programmer. Based on 100,000 new lines of code that the shop produces, each year it will have to hire five new maintenance programmers. Including their manager, this is an increase in the salary and benefits budget of $352,000 each year. Instead of hiring new maintenance programmers, the sample shop could decrease development work by shifting those resources to maintenance. But both of these options have clear and strong negative implications.

The $/LOC and the maintenance burden measures provide two broad but informative metrics that measure how efficiently IS is developing and maintaining computer systems. The next step is to refine the development metric so that you can gauge the effectiveness of improvements in changes to the development process.

You can break down development into the different stages of a systems development life cycle. Review your most recent projects and determine how much time was spent in each stage. Since these are broad metrics, don't get caught up in the details. For example, there is no need to divide maintenance any further, because knowing the unit costs associated with maintenance is not as important as knowing the number of developers required to support a system of a specified size.

In our sample IS shop, consider three systems development life cycle stages:

- **Designing**, which takes up about 25% of the shop's time and thus costs $25/LOC (based on $100/LOC).
- **Building**, which takes up 54% of the shop's time and costs $54/LOC.
- **Installing**, which should take up 21% of the shop's time and costs $21/LOC.

Overhead determination

Now you can analyze the department organization to get a measure of how much overhead goes into development costs. For simplicity's sake, consider four groups of employees (see chart next page). The first group is the most directly involved in the development process, while the fourth group has the least direct involvement.

A Group 1 employee works directly on the development or maintenance of systems. This group consists of application programmers and systems analysts. A Group 2 employee manages Group 1 employees and the associated clerical staff. Group 3 employees provide direct support to Group 1 employees; Group 3 consists of computer operators, system programmers and their managers. Group 4 employees are everyone else — the division vice-presidents, directors, department controllers, strategic planners, associated clerical staff and so on.

From these groupings you can see how much goes directly into running, managing and supporting the development process. Most important, you can now measure the effectiveness of your budget dollars. Clearly, Group 1 employees are the most effective at producing systems, while members of Group 4 are the least effective. Every dollar that can be moved from Groups 3 and 4 to Groups 1 and 2 will increase the amount of work produced by your own department.

The analysis so far shows that the sample shop produces new programs at a cost of $100/LOC, taking up 71% of the salary budget. This is allocated as follows: $18 (25% of 71%) on designing, $38 (54% of 71%) on building, $15 (21% of 71%) on installation and $29 on management and

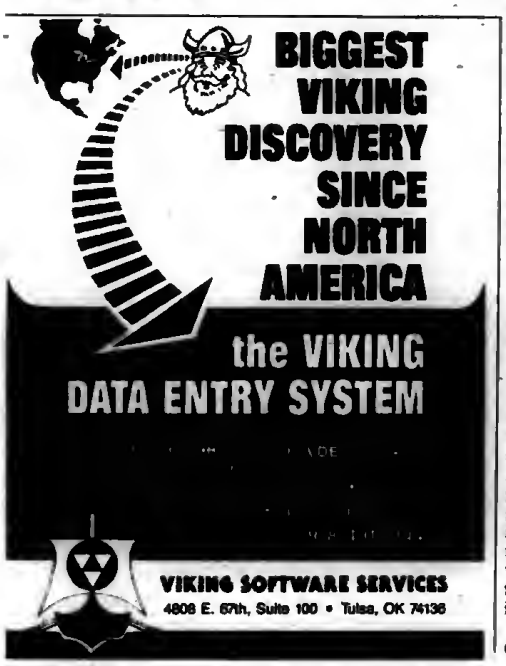
Look familiar?

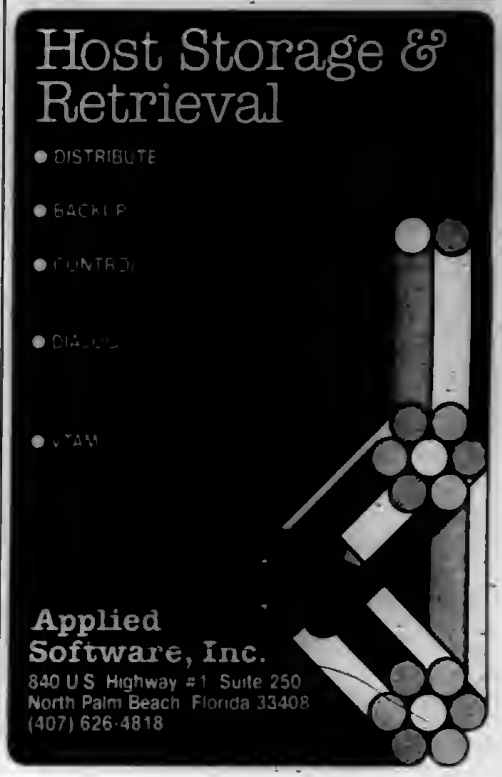
*A sample information systems organization**

Title	Salary	Number of employees holding title
Vice-president	$90,000	1
Director	$65,000	6
Development manager	$50,000	24
Development staff	$45,000	130
Clerical staff	$20,000	12
Development center	$40,000	4
Information center	$40,000	6
Strategic planning	$40,000	2
Administrative staff	$35,000	3
Total salaries	$7,905,000	—
Benefits (28% of salaries)	$2,213,400	—
Total	$10,118,400	178

* Does not include computer center staff

CW CHART





administration. Any improvements in development will affect only 56% of the departmental cost per LOC.

This study provides you with a wealth of information, including the ability to identify where your budget is being spent, how much you can spend on introducing new tools and what level of improvement must be attained to achieve payback.

Cost improvement

Now you have to consider ways to improve these cost figures. Suppose you could achieve a 25% increase in productivity by increasing the staff, reducing departmental costs or improving the LOC/programmer. Each of these options has advantages and disadvantages that you must weigh in your own evaluations.

- **Increasing the staff.** The first approach will require a salary increase of $2,313,600 in the sample shop (25% of the sum of Groups 1 and 2 salaries). This will have an impact on other factors including machine costs for development, maintenance expenditures and overhead. These costs may make this approach unacceptable to management.
- **Reducing departmental costs.** In the second approach, a 25% decrease in programming $/LOC will save a total of $2,529,600 (25% of $10,118,400). However, cost reductions must be achieved in such a way that reducing staff levels does not negatively affect productivity.
- **Increasing developer productivity.** In the third approach, a 25% increase in the LOC produced by the sample shop will reduce the programming, or building, cost per LOC from $38 to $28.50. The $9.50/LOC savings is $1,187,500 ([25% of 100,000 LOC + 100,000 LOC] x $9.50), or $9,424.60 per developer ($1,187,500 ÷ 126). This amount can be used to set a maximum on the investment necessary to achieve the desired productivity increases.

Of the three approaches, let's focus on the improvement of developer productivity, since the others are rather costly.

You can use the numbers developed to determine what the payback period will be for expenditures to improve productivity. If they will double the productivity of the implementation staff — that is, the LOC/year figure — how much of an impact will that have on the departmental $/LOC? You must also consider the impact on the maintenance burden. If you double the rate of developing new systems but do not double the maintenance burden, your maintenance budget will increase disproportionately. So, the approach selected must increase the productivity of not only the implementation staff but also that of the maintenance staff.

Suppose that it does increase both development and maintenance. Which steps in the systems development life cycle will be increased and by how much? These improvements must be measured both in terms of LOC/year and $/LOC.

IS overhead by job function

Who does what, how much do they cost, and how much of the total salary base do they consume?

Group	Number of employees	Salaries*	Percent of salary base
1 Works directly on systems development or maintenance	126	$7,219,200	71%
2 Manages Group 1 employees and associated clerical staff	30	$2,035,200	20%
3 Provides direct support to Group 1 employees	4	$204,800	2%
4 Everyone else (vice-president, directors, clerical staff)	18	$659,200	7%
Total	178	$10,118,400	100%

* Includes benefits

CW CHART

CASE and languages

One method of increasing developer productivity is to automate portions of the development process. Over the last several years, the increased power of personal computers has brought a number of very viable CASE products to the marketplace. It is still not clear, however, whether the return on investment is high enough to warrant their expense.

Premier PC-based CASE products cost about $8,500 per copy. A workstation to run them on will cost a minimum of $5,500. Training costs may be $895. Combining these, you get $14,895 per person, so that the total estimated cost for bringing in a CASE product to the sample IS shop will be $14,895 x 126, or $1,876,770.

A two-year return on investment coupled with an instant increase in productivity means that roughly $940,000 ($1,876,770 ÷ 2), or $9.40/LOC ($940,000 ÷ 100,000 LOC), must be reduced from the development costs. This must come completely out of the $56/LOC spent on the designing and building stages, reducing that expenditure to $46.60/LOC. Hence, the CASE product must bring about an overall increase of 20% in developer productivity, because you are not reducing the amount of money spent but increasing the productivity. That is, if you spend the $56/LOC, but the actual cost per LOC is reduced to $46.60, you can produce 20% more LOC, or 120,000. This improvement must also be achieved in the maintenance burden, increasing it to 24,000 lines/programmer ([20% of 20,000 = 4,000] + 20,000).

Alternatively, you can look at the new generation of programming languages that have recently appeared, such as IBM's DB2 with SQL, Oracle Corp.'s Oracle and Information Builders, Inc.'s Focus. Although database management systems have been available for many years, they have usually been embedded in a host language. Increases in productivity were restricted by that language. The increased power of new languages and their ability to execute on multiple hardware platforms means that it is now possible to discuss changing software platforms.

Function Points are one way to measure languages. The lower the number of Function Points, the more powerful the language is. According to Cambridge, Mass.-based Software Productivity Research, Inc. [CW, Nov. 7], the number of Cobol instructions required to implement a Function Point is 91, while PL/I requires 80 and SQL only 11. The 100,000 Cobol lines that the sample IS shop produces translates to approximately 1,100 Function Points (100,000 ÷ 91), with a cost-per-Function Point of $9,198.55 ($10,118,400 ÷ 1,100). In theory, the equivalent functionality would require only 88,000 (1,100 x 80) PL/I lines or 12,100 (1,100 x 11) SQL lines.

A more conservative estimate would assume that only 25% of the Function Points will achieve the full improvement, 25% will achieve half improvement, and 50% would achieve no improvement at all. Our 100,000 Cobol lines now translate into 95,562 PL/I lines, while SQL would require only 67,100 lines.

One of the more fascinating statistics that came out of the productivity studies performed in the late 1960s is that the LOC/day is relatively independent of the programming language. So no matter what programming language the sample shop uses, its 126 developers will produce 100,000 lines per year. However, the number of Function Points will increase. The following numbers illustrate the cost advantages of SQL over PL/I and PL/I over Cobol: As stated above, Cobol costs $9,198.55 per Function Point. PL/I, at 1,151 Function Points ([100,000 ÷ 95,562] x 1,100), costs $8,790.96 per Function Point ($10,118,400 ÷ 1,151) — not much of a drop. But SQL, at 1,639 Function Points ([100,000 ÷ 67,100] x 1,100), only costs $6,173.52 per Function Point ($10,118,400 ÷ 1,639). Clearly, the cost reductions achieved in switching to PL/I are not justified. Switching to SQL, on the other hand, does appear to be warranted. Remember, however, that there will be training costs and other negative impacts on productivity.

Product selection

Now that you have determined what level of improvement is necessary to justify the expenditures, you may start the selection process. You have already established two criteria: first, it must improve development and maintenance equally; second, knowing the cost of the product and its introduction, you know what you can reasonably afford. Your own preliminary research will quickly narrow your selection down to one or two major contenders.

Now you have to structure a pilot project that will test whether these product(s) will meet your improvement requirements, a rollout that generates enthusiasm among the staff and a final review to see if the rollout was successful enough to get people to use the product.

Performing these cost studies is fairly straightforward. Selecting, evaluating and implementing the productivity tools is also relatively straightforward. Surprisingly, the most difficult activity is rolling out to your staff.

Any of the approaches discussed herein could prove beneficial to your organization in cutting costs and improving IS effectiveness to the organization. The wrong approach, however, could be disastrous. Thus, choosing carefully becomes a critical task for today's IS managers. •

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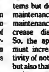

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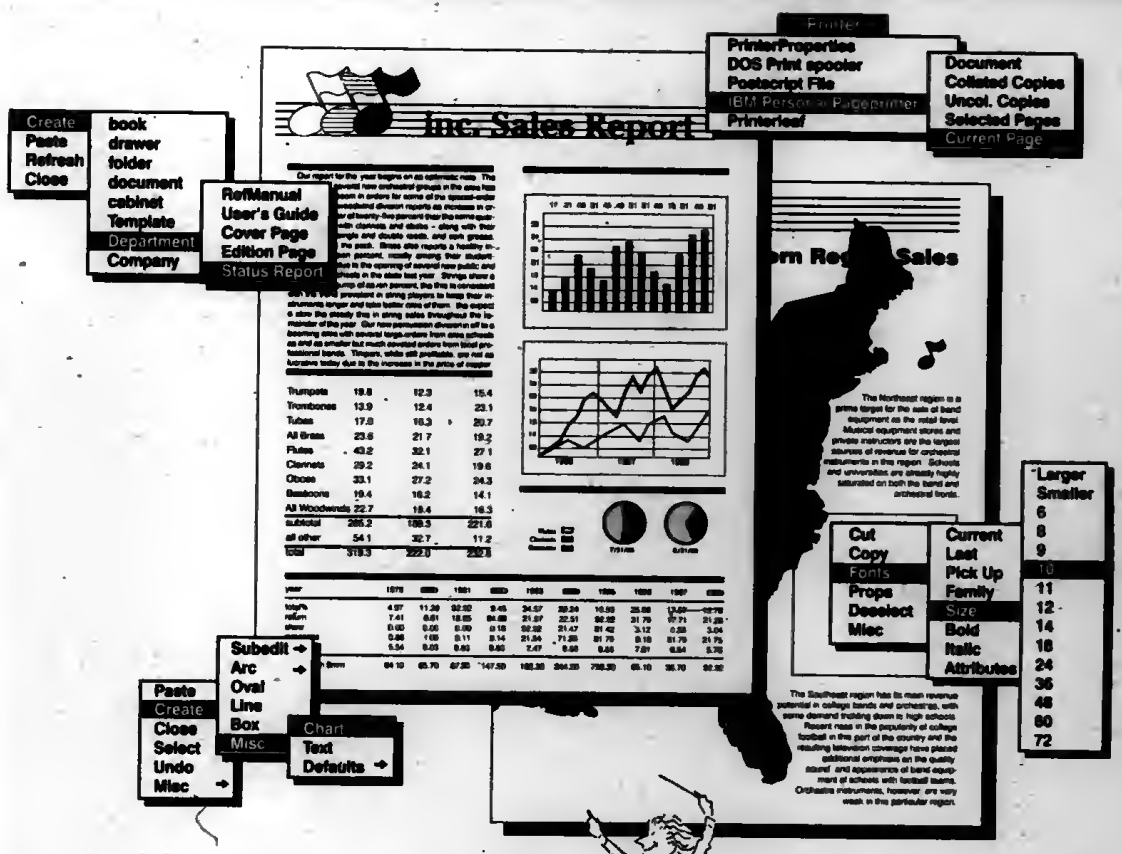

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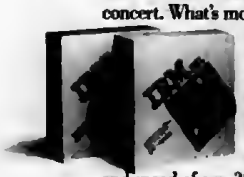

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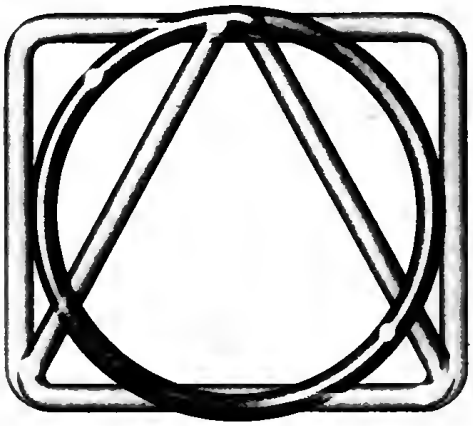

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INDUSTRY INSIGHT

Nell Margolis

Designing a winning idea

Building the perfect deck can enhance your lifestyle, your house's market value, maybe even the whole neighborhood. However, even the proudest weekend carpenter would probably agree that calling it a benefit to mankind is something of a stretch.

So what do you say when your company's software system that lets retail customers model and spec out their own decks on a computer wins an award that's been touted as recognizing "achievements of those who have used information technology for the benefit of mankind"? When you receive that trophy somewhere between, say, the software that gives the severely disabled some control over their environment through eye motions and the technology that tracks missing children?

More than a deck

What Innovis Interactive Technologies President Mark Lembursky said when cast into such a situation at the *Computerworld* Smithsonian Awards ceremony last month was a mouthful.

While Innovis' Designcenter doesn't pretend to vie for humanitarian effect with technology that tackles the likes of famine relief, its users, Lembursky said, get more than a deck out of the deal. "For many of them," he said, "this is their first good experience with a computer."

For increasing numbers of people, a close encounter with a computer — one that leaves them less daunted, put off or just plain bored by the technology that daily life and commerce increasingly require us to accommodate — approaches the import of an improvement in vision or hearing or learning.

It's just not stylish to admit to technophobia these days, so folks don't. Admit it, that is. Plenty still suffer from it.

The tacit acknowledgment that yesterday's word persists as today's problem emerges in the frustration of IS directors who continue to list training among their firms' largest invest-

Continued on page 81

HDTV: Boon or boondoggle?

Computerworld *Senior Correspondent J. A. Savage asked some of its cheerleaders and skeptics whether U.S. firms should explore computer-driven digital television. If so, should the U.S. government expand its HDTV funding, and should U.S. companies develop a wholly domestic HDTV industry?*

'It's not the job of the Department of Defense to entertain.'

Yves Faroudja, president, Faroudja Laboratories, Sunnyvale, Calif. Inventor of television enhancement devices.

"I'm totally for digital television, but [development will take] 10 to 12 years."

(Note: The various debates currently raging over high-definition television [HDTV] are further complicated by disparity in definitions: While some commentators define HDTV narrowly, to mean an analog technology aimed at quantum leaps in the quality of what you see on a television screen, others use it as an umbrella term covering so-called interactive digital video.)

"The real problem is the cost/performance ratio for bandwidth compression. We know how to do it, but for an extremely high price. The trick is to have the HDTV signal transferred to digital form. The problem is we don't know how to compress it without losing quality. Due to [the impending advance into] digital [video], any new analog scheme which is noncompatible with [current] standards will have a very short life.

The government should be in the business of writing laws. It should act like a bandleader, coordinating efforts. Funding anything whose ultimate purpose is entertainment — and HDTV is 99.9% entertainment — should be thought through. It's not the job of the Department of Defense to entertain. Since I emigrated here 20 years ago, I've seen money go one way: from me to the government. They want to finance me? I find that bizarre.

I am worried when I hear nationalistic statements being made. We should collaborate with the right Japanese firms."

'It's wrong to say HDTV is just entertainment.'

U.S. Congressman Edward Markey (D-Mass.), Chairman of the House Subcommittee on Telecommunications and Finance

"I think we have to create a climate in which all aspects of technology are pushed simultaneously, not one to the exclusion of any other. Right now there is a dilemma created by the fact that U.S. industry, to date, has not shown [much] interest in HDTV. This year there has been some concern, but it's a critical technology that we're not competing for.

Europe and Japan are in the eighth inning of a hotly contested game, and the U.S. is just getting into the station wagon to get to the ballpark. Our goal as policymakers is to address the reality that we're far behind Japanese and European industry and at the same time to create an economic climate to encourage research and development in all areas — including digital.

In some areas, the U.S. and the Japanese could cooperate. In other areas, particularly defense-related, and some even not defense related, it should be American only.

It's wrong to say HDTV is just entertainment. The feeling at DARPA [Defense Advanced Research Projects Agency] and NASA is that it's going to play a significant role in military weapons, intelligence and information gathering. This will be the cutting edge technology in the semiconductor area. It speaks to the heart of the modernization of military capacity.

We have to have a set of hearings to look at the antitrust laws to see how they've been an obstacle or impediment to HDTV. We need companies to come before us and testify as to why they did not get into the technology."

'I'm concerned with the country's loss of consumer electronics. It's cut a hole in the fabric of the economy. The idea that the U.S. could come back in HDTV . . . is positive.'

Alan Wolff, Washington, D.C.-based trade attorney

"The U.S. has a national security interest in being at the leading edge of technology and seeing industries succeed in a commercial market.

A strong semiconductor industry matters to the national defense; it's just as important as having the capacity to produce for a particular military application.

I'm concerned with this country's loss of [the] consumer electronics [industry to Japan and other Pacific Rim countries]. It's cut a hole in the fabric of the economy. This hurts the entire U.S. electronics industry's economic infrastructure, limiting revenues for investing in capital goods, new plants and research and development.

The idea that the U.S. could come back in HDTV — which is a highly semiconductor-intensive product — is a very positive development.

There could be room for cooperation with Japanese companies — that shouldn't be excluded — but we should have a significant American presence in the industry.

There are certain things that are absolutely necessary to create an environment in which American companies can come together to produce HDTV. There shouldn't be an excessive concern about antitrust. And there ought to be an environment free of the possibility of dumping — [overseas] dumping wiped out [American] color TV in the 1970s.

If there's a possibility of dumping, companies won't enter the HDTV market."

'It's easier for commercial technology to get strong when you prime the pump yourself.'

Larry Ryan, video processors manager, Intel Corp.

"Government subsidies should not be the main thrust. That doesn't have a good smell — it doesn't have the smell of success, especially when [the issue is] DARPA funding a consumer market. There should be nothing more than modest pump-priming by the government.

Besides, I haven't seen U.S. firms in the television business angling for HDTV. One of the reasons it's difficult to get private firms to fund [an analog] HDTV effort is that it's not a product that can be launched in a small way. HDTV is primarily a passive entertainment medium, and that's difficult to play off an initial selling of 1,000 units per year. You have to do a massive launch.

It's easier for commercial technology to get strong by priming the pump yourself. By selling development systems first, then boards, then chips, Intel can get early revenue and then ratchet up the learning curve on a pay-as-you-go basis.

One way to look at digital video is that it won't be so much competition with HDTV in the next decade as possibly a mainstay 10 to 20 years down the road. By the end of the '90s, digital signal compression will offer a great enough advantage, and cable and satellite transmission will be affordable enough that it will become cost-effective to transmit and locally decompress. Then it will be fair game for HDTV. In the short term, I don't see overlap [between analog and digital] HDTV, although there's more than a casual interest on our part."

For more comment on HDTV, see page 74.

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3Com reveals grand plan to boost sales

BY PATRICIA KEEFE
CW STAFF

SANTA CLARA, Calif. — 3Com Corp.'s recent annual analysts meeting here featured fancy footwork and fairly lofty goals compared with the network supplier's past statements and strategy briefings.

The effort involved in transforming 3Com from a small supplier of local-area networks into a network integration heavyweight has forced it to revise quite a few projections and curb some of its earlier enthusiasm.

Strategies outlined two weeks ago clearly will require major departures from the company's previously successful strategies and mind-sets, presenting possibly the biggest test yet for 3Com's oft-lauded management team.

Even better

For example, in early June, a week after 3Com warned Wall Street to expect lower-than-anticipated fourth-quarter revenue, 3Com Chief Executive Officer William Krause told *Computerworld* that sales of its flagship 3+Open software had "exceeded expectations."

Krause also downplayed reports that the 22-month-old 3Com purchase of Bridge Communications, Inc. had yet to gel, although he said that there had been difficulty putting together a direct sales force.

Two weeks ago at the annual analysts gathering, Krause not only admitted that sales of 3+Open were much slower than expected, he also conceded that the Enterprise Systems Division (ESD), which encompasses Bridge, had not been successful in winning a significant number of large accounts or in selling its traditional terminal-to-host products.

3Com's recently outlined plans to grab hold of big sales from large firms will likely fail unless the company can forge a tighter link with products inherited from Bridge and, at the same time, field an effective direct sales force. Otherwise, those plans may wind up sitting on the shelf next to unsold 3Com products.

Two equally vexing problems loom on the horizon, threatening future earnings: continued snail-like growth in OS/2 installations and a move by Novell, Inc. to cut Ethernet adapter prices.

Giveback

3+Open is an OS/2 LAN Manager-based network operating system. The currently lethargic migration to OS/2 has prompted IBM to concoct a $60 million rebate program. The boomerang effect on 3+Open has resulted in mostly pilot-oriented sales — not the scale to which 3Com expected to see 3+Open installed.

Since purchasing Bridge, 3Com has been fond of saying it sells "enterprisewide solutions" to large information systems departments, whereas its chief competitor Novell reportedly markets its products mostly to smaller companies and departments. 3Com has yet to fully live up to that description but it has outlined some steps in that direction:

- Creating $1 million-per-year accounts with large clients. This is a quantum leap for a company that until roughly two years ago swore to sell only through dealers and then proceeded to lose Bridge's initial direct sales force.
- Pushing ESD to gain design wins among the Fortune 500. However, some competitors and industry analysts claim ESD has been absent from many places where it could be counted on for competition before.

HDTV

CONTINUED FROM PAGE 73

'There is a government role . . . but there is no case for a massive subsidy for the private sector.'

Claude Barfield, director of science and technology policy at American Enterprise Institute, Washington, D.C.

"DARPA is not the [body] to make a decision on the public role for HDTV. No defense agency is.

There is no reason to go to the Department of Defense. There is the National Science Foundation or other civilian funding [resources that can be turned to].

The top 15 of the 36 companies who put together HDTV plans [to submit for DARPA funding] have cash flows in excess of $200 billion. They could easily afford it if they just passed the hat among themselves.

There is a government role — in standards, in antitrust and possibly in funding far-out research projects. But there is no case for a massive subsidy for the private sector.

The Federal Communications Commission is in the process of trying to fathom just what the national interests are. The FCC should take a look at what makes sense from the a U.S. point of view.

They've said [HDTV] has to be compatible with existing systems. That's sensible. You don't like to have existing technology made obsolete."

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IN BRIEF

Bell umbrella

A year of brainstorming at Ameritech resulted in a corporate realignment last week that links the five Ameritech Bell operating companies, Ameritech Mobile Communications and Ameritech Publishing as a strategic business unit. Among the executives reshuffled are former Bell Group head **Ormand Wade**, now vice-chairman of Ameritech, and former Ameritech Enterprise Group President **Robert Barnett**, who will replace Wade.

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Here's Bernie

Bernard J. LaCroute, formerly second in command at **Sun Microsystems, Inc.**, has signed on as a partner with the prestigious Palo Alto, Calif.-based venture capital firm **Kleiner Perkins Caufield & Byers**. LaCroute, who was executive vice-president of product and technology development at Sun, left in April because of the "hectic pace" of the firm, he said.

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10-9-8-7-6-5-4 . . .

Pending legal and regulatory clearance, IBM is set to sell its wholly owned subsidiary, **Satellite Transponder Leasing Corp.**, to **Hughes Aircraft Co.** subsidiary Hughes Communications, Inc. Among other assets, Hughes stands to get two communications satellites already in orbit and a third due for launch next June.

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Oracle pinnacle

Relational database player extraordinaire **Oracle Corp.** last week reported fourth-quarter 1989 net income of $33 million — up 76% from last year's comparable period — on revenue of $216 million, a 107% leap from last year's fourth-quarter sales figure. Annual revenue also increased 107%; net income for the year grew 91%. "Continuing our 100% growth rate is especially gratifying in light of the general difficulties experienced by so many data processing companies," said Chief Executive Officer Lawrence Ellison.

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No fireworks

Management changes quietly took place during Fourth of July week at Alameda, Calif.-based **Relational Technology, Inc.** (RTI). **Chris Greendale** has replaced Robert Healy as vice-president of marketing. Further, **Marty Sprinzen**, formerly vice-president of engineering, will take the position of senior vice-president of international operations. **Marilyn Bohl**, an IBM veteran and most recently vice-president of product development at RTI, has assumed Sprinzen's former post.

Sematech faces economic challenge

BY J. A. SAVAGE
CW STAFF

AUSTIN, Texas — As the high-profile U.S. semiconductor consortium Sematech submits its annual operations plan to Congress for approval this month, the 3-year-old group faces two hurdles; one technical, which it will likely overcome, and one economic, where the chances may not be so good.

To live up to its mandate, Sematech is expected to design machines capable of the submicron precision needed by U.S. manufacturers to build 16M-bit memory chips for U.S. semiconductor companies. More difficult, perhaps, is that it has to find U.S. companies with a continuing economic interest in manufacturing the machines in the design.

Trying to regain some of the world semiconductor market and, in so doing, provide a reliable U.S.-based source for indigenous computer manufacturers and the military is Sematech's raison d'etre. It is not that the chips will necessarily be cheaper or better; the idea is that at least they will be American.

Sematech is not in the chip production business, but instead the business of providing process technology to its members, including: AT&T, the U.S. Department of Defense, Digital Equipment Corp., Motorola, Inc. and 11 other organizations.

How its members keep other U.S. companies in the business of producing machines such as lithography steppers, which are now produced by Japanese camera companies such as Nikon Corp. and Canon, Inc., may be the most difficult question facing the consortium. Sematech, in its own processes, uses Nikon equipment.

The one large U.S. source for an elec-

tron beam etcher, Norwalk, Conn.-based Perkin-Elmer Corp., is up for sale.

"We've worked with Perkin-Elmer to make it an attractive package for an American company to buy," said Turner Hasty, acting chief operating officer for Sematech. He is not so sure that will happen and has a backup plan to turn to Philips N.V., which is based in the Netherlands, as a possible buyer.

"If we can get a sense of national purpose," said Robert Noyce, president of the consortium, the U.S. could have the same chance of getting back the dynamic random-access memory (DRAM) market as the Japanese had in very large-scale integration, Noyce said.

Sematech, however, is not concentrating on DRAMs per se but on the underlying technology, according to Noyce. That means developing the manufacturing equipment to produce 4M-bit DRAMs — which use 0.5-micron technology — and a 16M-bit chip that is expected to require 0.35-micron precision. Noyce declared that the next generation of process technology will not be accomplished with DRAM templates.

To encourage small businesses to develop machinery and other goods (such as clean-room garb) that complement rather than compete with semiconductors, Sematech makes its facility available to manufacturers for design work.

Sematech's Noyce

"IN A $1 billion business, 800 players are too many. If companies are working together, then if one gets into trouble, another can step in and help without the technology [leaving the U.S.]"

Expects increasing consolidation

While encouraging the proliferation of small makers of manufacturing equipment in this way, Noyce expects the semiconductor business will be driven into increasing consolidation.

"In a $1 billion business, 800 players are too many. If companies are working together, then if one gets into trouble, another can step in and help without the technology [leaving the U.S.]," Noyce explained.

One of those consolidated efforts could be the newest consortium, U.S. Memories, announced last month. That consortium has seven vendors, all already Sematech members.

Noyce and Hasty joked that the vast empty fields surrounding the Sematech plant would be ripe for the U.S. Memories facility.

"A couple of years from now they will be looking at a 16M-bit chip. That would coincide with a tool set coming out of Sematech," Noyce said.

"WE'VE WORKED with Perkin-Elmer to make it an attractive package."

TURNER HASTY
SEMATECH

So far, Sematech's biggest achievement is its facility on the outskirts of Austin.

Bragging that the production plant took only eight months to build, Kristopher Lee, facilities engineer, said that great pains were taken to reduce vibration in processing, including the separation of vibration-inducing machines, such as boilers, into a separate facility. Stability is required for machines to etch 0.5 or 0.35 micron into silicon. "No one knows how to do 0.35-micron work yet," Lee said.

The facility, he said, also has state-of-the-art controls on chemicals in the workplace and air filters and scrubbers to reduce pollution, as an example to its members of what can be done with new equipment.

Yet, the new facility still vents chlorofluorocarbons, which are implicated in the destruction of the ozone layer, while chip manufacturers such as IBM and Hewlett-Packard Co. are enclosing and recycling the chemical.

Scorecard (Part 2)

Who's really putting ISDN on the map? If you've seen the headlines, you know the score.

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Phoenix's earnings plummet; problems suspected at firm

BY RICHARD PASTORE
CW STAFF

NORWOOD, Mass. — Phoenix Technologies Ltd. said last week that it expects to report a net loss of $500,000 to $1 million for its quarter ended June 30. Company Chairman Neil Colvin blamed slow sales of its Unix workstation products, but sources close to the company said the problems run deeper than that.

"The Unix shortfall hasn't been anywhere near the disaster that the Phoenix Page printer products have been," said a source close to the firm who wished to remain anonymous. Phoenix Page, announced about two years ago, is the company's clone of Adobe Systems, Inc.'s Postscript printer language.

Coupled with weak sales, the engineering overhead necessary to keep Phoenix Page comparable to the evolving Postscript has created a financial sinkhole, one source explained.

Phoenix's IBM Personal System/2 BIOS product has also been a sales disappointment, said more than one source. "Nobody seems to be jumping on the PS/2 bandwagon and buying PS/2 BIOS in quantity," a source said. "That's a scarier thing to announce, because it means none of their new products have really taken hold." Phoenix officials were not available for comment on either situation.

Phoenix's latest area of concentration has been the licensing of Sun Microsystems, Inc.'s SunOS operating system for Unix-compatible workstations. David Card, senior analyst at Framingham, Mass.-based market research firm International Data Corp., said the Norwood, Mass.-based firm's Unix offering is hobbled by at least two constraints.

The first constraint is a poor match between Intel Corp. 80386-based workstations' graphics capabilities and Sun software, Card said. "Basically, if you have a 386 PC running the Phoenix license, you don't have the graphics to run the software for Sun. Phoenix needs to better acknowledge the graphics," Card said. "I don't think you can even run the right number of pixels on most of the PC monitors out there."

In addition, the "second-tier" personal computer clone makers, upon which Phoenix heavily relies, are mired in a slump and are therefore hesitant to jump into the Unix clone market, Card said. This slump may also account for slack PS/2 BIOS sales, he added.

In light of the impending loss, Phoenix's adjustment measures include a layoff of 26 of its 400 or so staff and salary cuts of between 15% and 40% for 35 members of senior management. The salary cuts reflect well on management's sincerity to pull out of the dive, an analyst said.

Hinsdale fire prompts state emergency plan

BY ELLIS BOOKER
CW STAFF

SPRINGFIELD, Ill. — Lawmakers here passed legislation late last month requiring a state-approved emergency telephone service plan for telephone companies operating in the state.

Demand for the plan, which will create fire and alarm standards for telephone company switching centers, were prompted by a disastrous fire in an Illinois Bell central office last year that disrupted phone service to thousands of residential and business customers. The outage at the Hinsdale, Ill., switching hub, believed to be the worst in the history of the U.S. public telecommunications network, attracted national attention and prompted telephone companies and users across the nation to rethink the design of their networks to avoid "a single point of failure."

Identical bills passed by the Illinois General Assembly's House and Senate and sent to Gov. James Thompson for signing call for the Illinois Commerce Commission, the State Fire Marshal and the state's Emergency Services and Disaster Agency to coordinate efforts to establish the fire and alarm standards. Under the legislation, telephone companies can be fined up to $10,000 for each violation of these future standards and up to $1,000 for each day that a violation continues.

For its part, Illinois Bell, the largest of the state's telephone companies, has taken a neutral position regarding the legislation. "At the time the legislation was being considered, we questioned whether it was needed, but we didn't object to it," said an Illinois Bell spokesman.

Meanwhile, several class-action suits are still pending in state Appellate Court over the Hinsdale fire. Earlier this year, the Cook County Circuit Court granted Illinois Bell's motion to dismiss the suits, citing its limited liability as a utility company. The Appellate Court reportedly will rule on the cases early next year.

GOOD NEWS

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NICKELS & DIMES

BGS Systems, Inc., maker of capacity-planning and performance-management products for IBM mainframes and networks, announced a 45% increase in profits for its first quarter ended April 30 as compared with the first quarter of the previous fiscal year. Total operating revenue grew by 13.7% from $3,851,000 in the first quarter of 1989 to $4,379,00 in first-quarter 1990.

Wordstar International, Inc. announced net earnings of $199,000 and revenue of $11,858,000 for its third fiscal quarter ended May 31. In the same quarter of the preceeding year, the company reported a net loss of $1,762,000 on revenue of $10,033,000. First-quarter fiscal 1989 results were affected by reorganization, severance and outplacement costs of approximately $500,000 and write-downs of inventory and related capitalized royalty costs of approximately $300,000, the firm said.

Egghead Discount Software reported a loss of $12.1 million in the fiscal year ended April 1, 1989. The company's fiscal 1989 loss compares with last year's earnings of $4.6 million. Egghead's fiscal 1989 revenue increased 70% to $342.4 million, compared with $201.1 million in fiscal 1988. For the fourth quarter ended April 1, 1989, Egghead's revenue was $97.1 million compared with $65.3 million in fiscal 1988's final quarter.

Tektronix, Inc. announced that earnings for its fiscal year ended May 27 are expected to be between $18 million and $20 million. This compares with a loss of $16.7 million in the prior year. Sales in fiscal 1989 are estimated to be approximately $1,433 million, up about 1% from fiscal 1988.

Multiuser hardware and software vendor **Alpha Microsystems** reported a profit for the first quarter ended May 28 of $579,000 on net sales of $14,087,000. During the same period last year, the company reported a profit of $672,000 on net sales of $12,128,000.

On-Line Software International, Inc. announced results for its fourth quarter and year ended May 31, 1989. For the quarter, revenue increased to $22.2 million from $18.8 million a year ago. In the current quarter, net income was $900,000 compared with a net loss of $4 million last year. For the full year, the company reported revenue of $82.1 million compared with $81.2 million for fiscal 1988. For fiscal 1989, the organization had a loss before extraordinary gain of $1 million compared with income before extraordinary gain of $500,000 last year.

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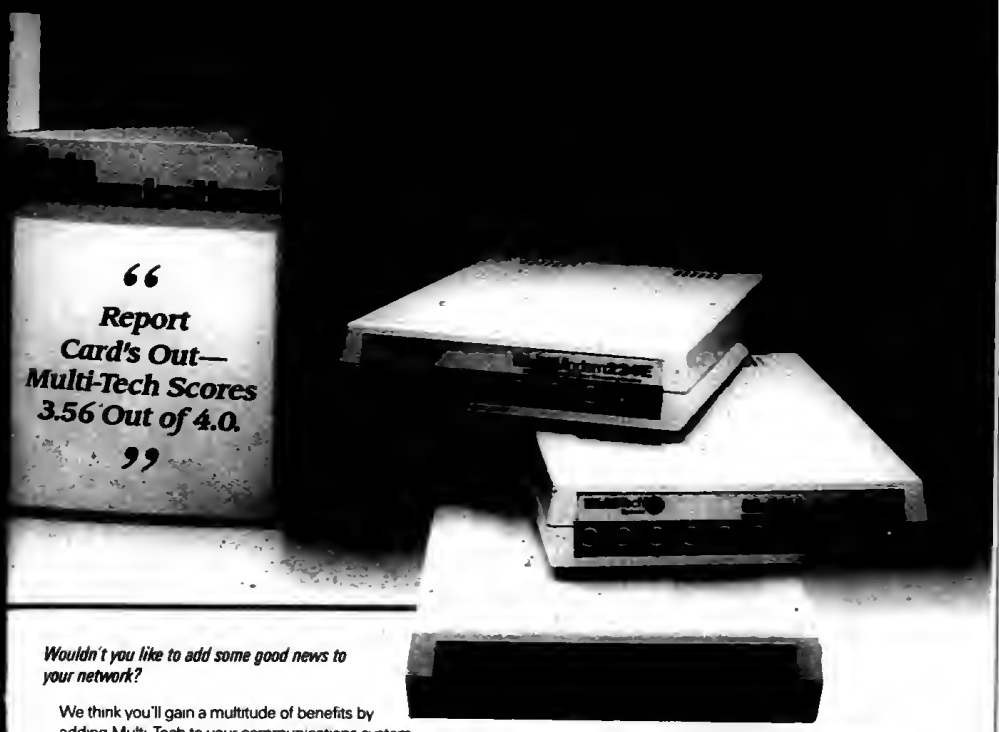

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Margolis

CONTINUED FROM PAGE 73

ments and most dreaded problems." It emerges from surveys like the one done by Case Research, Inc. last summer that revealed not only a whopping amount of user reluctance to embrace computer-aided software engineering but also a shocking number of already-bought-and-paid-for relational databases sitting around idle.

Computer discomfort isn't trivial, either for those who endure it or for those who have to deal with them. Unstylish and unadmitted, a lack of comfort with computers is also unaffordable. You can't get there from here these days without encountering a computer in some form or another. To be ill at ease with an omnipresent technology can be — no kidding — quite a handicap.

True, the omnipresence is itself working a future cure: Surrounded with this stuff since birth, our children are overwhelmingly likely to grow up both computer-literate and computer-comfortable.

However, it's going to be a while (we hope) before this fully cured generation occupies the seats of power and responsibility. We're still stuck with facing the challenge of eliminating computer discomfort among the generation that's out there now.

Innovis Technologies, however unintentionally and incidentally, is rising to that challenge. In noting that it is, the company's president made more than just a gracious acceptance speech — he made an important point.

These days, it's hard to find a computer company press release that isn't larded with references to "increased focus on our customers' needs" and the company's mission to offer not products but "solutions."

What could customers need more than the ability to help end users over any unspoken discomfort with the hardware and software for which the customer is paying big-ticket prices? As for solutions, whether or not you're offering a solution depends a lot on what you have defined as the problem.

Computer discomfort is a problem, and customers who don't think it's their problem are kidding themselves. Any vendor whose offering serves to abate this problem deserves a big tip of the hat.

Margolis is *Computerworld's* senior editor, industry.

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COMPUTER CAREERS

Here's a job with real security

Safeguarding corporate data is an increasingly important function

BY JANET MASON
SPECIAL TO CW

The position of data security manager holds promise for information systems employees who are willing to forgo immediate remuneration and visibility for the long-term goal of a key corporate position.

Industry observers and people holding the positions agree that while data security managers are not yet accorded their due respect, greater visibility and compensation will come.

Media coverage of the threat posed to IS by security breaches and disasters will prompt more senior managers to recognize that data security is the wave of the future, contends Jack Bannan, manager of information security at General Electric Co. in Cherry Hill, N.J.

The demand is already here. In 1988, IS installations spent an average of 2.3% of their budgets on computer security, up from 1.9% in 1987 and 1.4% in 1986, according to "DP Budget," a newsletter published by Computer Economics, Inc. in Carlsbad, Calif.

"In recent years I've seen help-wanted advertisements for computer security people. Five years ago, they weren't there," Bannan says.

Demand stems partially from the growing importance of IS and the risks associated with the shift from centralized computer facilities to networks of distributed processors and personal computers, experts say.

In most organizations, responsibility for data security is coupled with that of disaster-recovery and contingency planning, according to Rick Koenig, associate director of the Computer Security Institute in Northboro, Mass.

Generally secure

Responsibility for information security in a broader sense is also being stirred into the soup as companies realize that all their information, whether computerized or not, must be protected. There is little reason to safeguard computer files if printouts of them are left lying on desks at night, Koenig says.

Gerald E. Mitchell handles all of these duties in his role as director of data security at IDS Financial Services, Inc. in Minneapolis. Mitchell was assigned to create a business continuation plan seven years ago, following a major fire at a bank across the street from IDS headquarters.

"We decided that the whole process of disaster recovery needs to be looked at, rather than just how to save the main computer and its databases," Mitchell says. "If you lose terminals in a fire, you lose access to the information in the mainframe. And in the event of a disaster, employees need an office to report to."

Some people in IS, Bannan among them, say there is a trend toward separating responsibility for data and information security on the one hand and contingency planning and disaster recovery on the other. "The contingency-planning function is growing," Bannan says. "Now, more plans are in the test stage. Before, many were simply sitting on shelves."

> "IN RECENT years I've seen help-wanted advertisements for computer security people. Five years ago, they weren't there."
>
> JACK BANNAN
> GENERAL ELECTRIC

Joan Reynolds, vice-president and corporate data security officer at Chemical Bank in New York, typifies this trend. Until two years ago, Reynolds' position included data security and contingency planning; now she handles only data security. The change, implemented two years ago, reflects a recognition of the growing complexity of the two areas, Reynolds says.

While demand for data security managers has been growing, salaries do not reflect a premium. "The salary is no higher than other IS specialties," says Cameron Carey, president of the Computer Security Placement Service, Inc., also in Northboro, Mass. "In fact, it might even be a step below in salary because the discipline, which started in the mid-1970s, is not long-lived."

In cities such as Boston or New York, salaries for positions in data security at large firms can reach $80,000 to $90,000, Carey says. In midwestern areas such as Kansas City, they fall in the mid-$50,000 range, in part reflecting a lower cost of living.

Qualifications sought in data security managers include expertise in business, technology and communications. For starters, data security and disaster-recovery managers need to know which computerized functions a business cannot afford to lose, says Roger O'Connor, senior consultant at the New York compensation consulting firm Edward Perlin Associates, Inc.

People working in the lower and middle echelons of data security usually come from a background in programming or systems analysis because they should be familiar with software, Carey says.

Their counterparts in disaster recovery, on the other hand, tend to come from computer operations, which provide expertise in telecommunications and related areas. Higher level managers in either field are expected to possess expertise in both areas.

Bannan, who has worked in data-center operations and administration for 27 years and as manager of information security for 11 years, says it is easy to find satisfaction in his current work. "I see accomplishments all the time," he says. "Even a failed disaster-recovery test is a success — you learn from your mistakes."

Reynolds agrees, for the most part. "I've been in the field for 11 years, and I'm still constantly doing new things," she says. A major drawback, however, is that the work can infringe on the productivity of fellow employees. "Just as in any other control function, such as auditing, you have to be sensitive to the fact that not everyone appreciates security," Reynolds says. "You have to sell them on it."

Mason is a Philadelphia-based freelance journalist.

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Analyst/Programmers—These positions involve the maintenance and enhancement of medium to highly complex applications utilizing high-level languages to develop multi-system interfaces and to provide production support. Job requirements are one to three years experience programming in COBOL and/or PL-1. Knowledge of OS/JCL, IMS, DB/DC, ADF, Mark IV, and dBase a plus.

Data Base Analysts—Working with state-of-the-art technology the selected individuals will be responsible for the design, implementation, tuning, back-up and recovery of IMS data bases. Two plus years experience as a DBA with a thorough knowledge of IMS concepts is required. Knowledge of DBRC and Fast Path is a plus.

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We have recently installed a new CDC Energy Management System at our Arkansas location. This position will be responsible for developing, implementing, and testing real-time applications and/or network applications software for the Bulk Power Management System computer.

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Entergy Services, Inc. offers an exceptional relocation package including a relocation allowance (one month's salary) paid moving expenses paid house hunting trip Mortgage Interest Differential, plus Interim Living. For more information, call our toll free number below or send resume to T. Porter, Entergy Services, Inc., P.O. Box 61000, New Orleans, LA 70161.

1-800-231-4481
In Louisiana call collect (504) 569-4965

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FAX 503-645-7732
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An annual salary of $38,000.00 to $46,000.00 will be paid for a 40 hour work week.

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data processing

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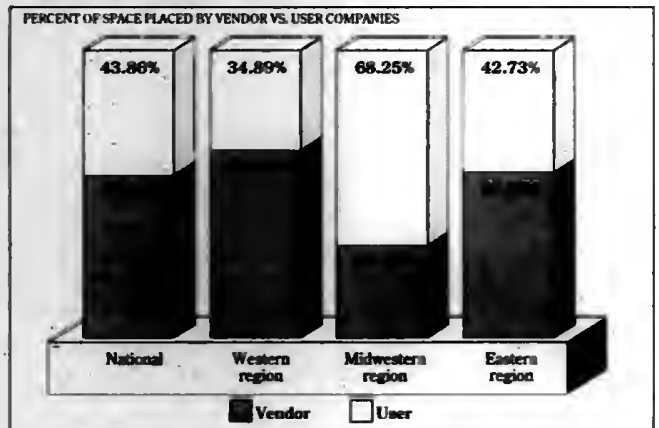
CAREER INDEX

May 1989 computer recruitment advertising activity*



*Analysis of computer recruitment advertising space in *Computerworld* and selected major U.S. newspapers

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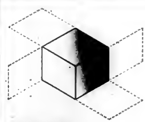

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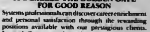

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Indiana University,
Computing Center Assistant/Associate Directors

Indiana University, with an enrollment of over 88,000 on 8 campuses, has recently merged its academic and administrative computing centers. Under the leadership of the Dean and Executive Director, 6 Associate and Assistant Directors will administer the new University Computing Services organization. This unit, together with campus computing centers, will be responsible for delivering academic and administrative computing services to all 8 campuses of the University. UCS is a large organization (300+ FTE) with a complex multivendor distributed computing and network system. Indiana University is seeking strong technical leaders who can guide the evolution of the University's computing and information systems into the 90s. Candidates must be capable of vision and of leading the organization through this major change. Responsiveness to the academic and administrative needs of the University is essential. The Associate/Assistant Directors will participate in the organization-wide University Computing Services senior management team. To apply for one of these positions, submit resume, and names of at least three references to Rich Marek, IU Personnel, Poplars Building, Room 121E, Bloomington, IN 47405. Deadline for applications is 31 July 1989.

Associate Director for Network Systems. Directs the UCS division of Network Systems, which is responsible for all aspects of wide area network planning and operation. The University Computing Services network responsibilities include a University-wide SNA network, a new fiber optic FDDI backbone network and coaxial Sytek terminal network on the Bloomington campus, a coaxial-based Ethernet with TCP/IP in Bloomington, and a TCP/IP and DCA backbone between all 8 campuses. This division is also responsible for management and maintenance of distributed networks and communications systems for departments and campuses on a contract basis. The division plans network-oriented applications such as electronic mail and file serving.

Associate Director for Workstation Systems. Directs the UCS division of Workstation Systems, which is responsible for all aspects of personal computer and advanced workstation planning, support, and service for UCS. At present this includes MS DOS, Macintosh, NeXT, Sun, Apollo and other workstation systems. This division is responsible for LAN applications, personal productivity and research applications.

Associate Director for Information Systems. Directs the UCS division of Information Systems, which is responsible for the design, development and delivery of University-wide shared information systems for both academic and administrative use. At present these include academic, financial, human resources, and student information systems. Major progress must be made in exploring the evolution of these and other information systems toward relational database technologies and in improving access to institutional data.

Associate Director for Computing Systems. Directs the UCS division of Computing Systems, which is responsible for the design and management of the UCS mainframe and distributed computing environment. This includes IBM 3084Q, IBM 3090-120VE, a large 7 processor VAX cluster, several stand-alone VAXes, a CDC Cyber 855, and several departmentally owned systems. The division is also responsible for supporting MVS, VM, NOS, NOS VE, VMS, and UNIX operating systems, and research applications such as programming languages and statistical and mathematical programs.

Associate Director for Support Systems. Directs the UCS division of Support Systems, which is responsible for the direct user support across all UCS technology divisions. This division plans and delivers direct technical consultation, assistance and referral, acquisition consulting for personal productivity and workstation hardware and software, educational programs, and assistance with the planning of departmental and campus computing environments. This division also provides consulting by part-time student consultants in the public computing clusters on the Bloomington campus.

Assistant Executive Director for Management and Administration. Directs the UCS Division of Management and Administration, which is responsible for the budgetary, financial and accounting, publications, internal planning and project management, reporting and security, and human resources/office support functions. Responsible for audit and oversight of all administrative and management functions and for providing leadership in managerial, administrative, and financial areas for all UCS managers. Serves as the chief financial officer of UCS to establish administrative and financial policies and procedures.

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Ball State University
Muncie, Indiana

The Computer Graphics Coordinator is responsible for overseeing the development and utilization of Ball State University's graphics facilities. These facilities include the Computer Graphics Laboratory, the Intergraph system and microcomputer graphics. The Computer Graphics Laboratory, located in the Architecture Building, maintains an on-going cooperative relationship with the College of Architecture and Planning with its instructional lab located adjacent to it. Minimum Qualifications: Masters degree in computer science, resource planning, technology or related fields; demonstrated ability to communicate effectively orally and in writing. Preferred Qualifications. Experience in areas related to Digital Image Processing, Digital Resource Mapping, Geographic Information Systems, Video Applications, Artificial Intelligence, Computer Aided Design and general knowledge of computer graphics; knowledge of Intergraph Systems, UNIX and VMS operating systems; demonstrated ability to design and develop applications for a variety of graphics-related problems. Salary will be commensurate to candidate's experience. Send letter of application, vita, transcripts and three letters of recommendation to Dr. Dennis Kramer, Director, University Computing Services, Ball State University, Muncie, IN 47306. Review of applications will begin immediately and continue until position is filled.

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A screen with a better view

For some, a new system is the route to color-enhanced, high-resolution displays

BY JOHN WEBSTER
SPECIAL TO CW

Your personal computer users are getting cross-eyed from reading 40-column spreadsheets, and they are turning out word processing documents with too many typos. You could begin asking for 20/20 vision in job descriptions, or you could invest in better graphical displays.

Enhancing your displays with better resolution or color is the more practical choice. Microcomputer managers say the way to approach this can depend on the application software you are using and whether you want to upgrade your entire system. Whatever the choice, most managers weigh improved performance against the cost of equipment and technical support.

The most elementary step is to move from monochrome to color. In the IBM-compatible world, there are progressively refined levels of color display and resolution. IBM's original color displays for PCs were based on its Color Graphics Adapter (CGA) board and accompanying monitor, which provide resolution of 640 by 200 pixels and four simultaneous colors.

In 1984 IBM introduced the Enhanced Graphics Adapter (EGA), which delivers resolution of up to 640 by 350 pixels and up to 16 simultaneous colors. With the arrival of its Personal System/2s in 1987, IBM introduced the Video Graphics Array (VGA), which provides a resolution of up to 640 by 480 pixels and a simultaneous display of as many as 256 colors.

While a few managers say color is more of an office status symbol than a necessity, others contend that it makes a difference in workers' output. "We have very, very few monochrome systems installed. We looked at it early on and decided that a graphical user interface warrants color," says Garrett Hayes, assistant vice-president and PC coordinator at First Interstate Bancorp, a bank holding company in Los Angeles. "Even if the primary application is word processing, from an ergonomic standpoint, efficiency is higher and operator fatigue is lower with a color system," Hayes contends.

Graduating from monochrome to color did more than merely pacify hue-hungry employees at Wells Fargo Bank, N.A. in San Francisco. It increased productivity and streamlined document processing, says Kingsley G. Mar, executive vice-president of corporate sales and manager of research and development at the bank. After installing VGA cards into its 300 PCs, the average number of drafts per document dropped from 3.75 to 1.25 as errors were reduced.

This tangible increase in worker productivity — achieved for the price of a color card — translated into the right price/performance equation for Wells Fargo. "We had to justify the expense and cost of color vs. the quality. We held the line on that until the price/performance was acceptable. Being able to buy VGA boards for under $300 looks awfully good to us," Mar says.

While simple add-in boards suffice nicely in some instances, the situation becomes more complex for corporate users needing high-end graphics and color. Many of these managers opt for an entire system overhaul because they would rather not burden a PC based on Intel Corp.'s 8086 or 8088 chip with sophisticated display technology. The user interface would bog down, and CPU cycles would have to be strictly rationed.

Although they admit that buying new systems is a relatively costly solution to upgrading graphics, managers doing so claim the extra outlay is worth it.

The requirements of application software also might lead organizations to enhance graphics by upgrading an entire system. The Phoenix bureau of TRW, Inc.'s Real Estate Information Services recently picked up VGA capabilities when it purchased an Intel 80386 machine to meet the memory and speed requirements of its desktop presentation software.

"We intended to do demos on a machine equipped with EGA, but the programs required 2M bytes of memory and a 386, so by accident we got the VGA stuff," explains Marty Clark, manager of information services at the bureau. The new IBM-compatible system, which includes VGA as standard equipment, cost about $3,100.

Other user concerns relate to the migration to IBM's OS/2 operating system. Its 4M-byte minimum memory requirement and need for hard-disk space render most 8086- and 8088-based PCs obsolete. In fact, corporate PC purchases are dominated by machines with the 80386 and related 386SX chips, according to Bruce Stephen, an analyst at International Data Corp. For instance, Pacific Power and Light in Portland, Ore., replaced 100 computer systems rather than hook up new monitors and graphics boards. The cost was $300,000, but the company not only added VGA graphics, it also beefed up its storage space and processing speed.

Webster is a free-lance writer based in Boston.

> "EVEN IF THE primary application is word processing, from an ergonomic standpoint, efficiency is higher and operator fatigue is lower with a color system."
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The BoCoEx index on used computers

Closing prices report for the week ending July 7, 1989

	Closing price	Recent high	Recent low
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XT Model 086	$800	$1,150	$700
XT Model 089	$1,200	$1,400	$950
AT Model 099	$1,725	$1,850	$1,500
AT Model 239	$1,800	$2,100	$1,775
AT Model 339	$1,775	$2,000	$1,700
PS/2 Model 50	$1,700	$2,000	$1,700
PS/2 Model 60	$3,200	$3,300	$2,500
Compaq Portable I	$425	$750	$325
Portable II	$1,700	$2,100	$1,700
Portable III	$2,875	$2,950	$2,200
Portable 286	$1,900	$2,000	$1,675
Plus	$900	$1,200	$900
Deskpro 286	$2,050	$2,350	$1,800
Deskpro 386	$2,625	$2,900	$2,500
Apple Macintosh 512	$550	$650	$300
512E	$750	$925	$600
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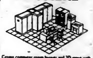

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Correctly spelling out needs

Needs analysis is essential to establishing a realistic training program

BY MARK DUNCAN
SPECIAL TO CW

Curriculum planning is essential to the success of any information systems training department. However, curriculum planning itself depends on another activity — analysis of needs. The needs analysis should go beyond identifying educational requirements to include selecting training media and verifying the availability of students and classes.

Training vendors often include a periodic needs analysis as part of their contract services. If the in-house staff does the job, the following suggestions may be helpful.

Interviewing staff members is the primary means of collecting information for a needs analysis. Rather than starting cold, these preliminary activities will help collect information necessary to ensure that the resulting curriculum is pertinent and practical:

- **Ascertain budgetary limitations.** It is worthwhile knowing at the outset whether there are any budgetary constraints. It is pointless to conduct an analysis only to find there is no money to follow up. On the other hand, a diligent needs analysis could be useful as leverage in seeking an increased training budget.
- **Produce staff profiles.** The training will more than likely address several staff levels, so it is important to establish profiles by job title, job description, required skills and other relevant factors. The personnel department may be the primary source of this information.
- **Establish foundation courses.** Even at this stage, simply based on staff profiles, it will be possible to identify foundation courses appropriate to the various job descriptions. For example, a programmer or analyst will require a mix of courses in systems analysis, design and programming languages.
- **Identify specific needs and "must haves."** In addition to the foundation courses, the IS department may have other needs for the current or upcoming period. There may be critical systems requiring staff members to be trained in a new language or a new software-development product. Sources of such information include annual and long-range plans and interviews with managers.

Suitable arrangements

All the data collected so far should be arranged in lists and categorized in suitable groups. These groups might include programming languages, analysis and design, database and data communications, personal computer technology and fourth-generation languages. People interviewed will then find it easy to identify the training programs they need or want. The lists should also indicate the level of training required. To save time, training vendors can be solicited for catalogs of course offerings.

After identifying general and specific training needs, staff interviews can determine deficiencies in required skills and give staff members an opportunity to request training.

Interviews can be conducted in a variety of ways. One stratum of the department — say, programmers or project leaders — might be addressed at a time. Training needs might be identified by project team.

Four factors must be discussed during interviews: timing constraints, such as a skill requirement by a specific date because it is tied to a time-critical project; the level of training (introductory, intermediate or advanced); student availability; and preferences for training media.

Correct timing

At this point it is possible to consult vendors' catalogs to determine the availability of courses. Depending on the delivery medium, timing can be a critical issue. Generally, videotape, computer-based training (CBT) and interactive video courses are available on demand. Arranging instructor-led classes will require more time, especially if a specific instructor is requested.

One possibility that should not be overlooked with regard to instructor-led classes is the use of internal talent. Every IS department boasts specialists or experts in various subjects, and some of them will find teaching a satisfying supplement to their regular work.

All the information collected so far provides input for curriculum development. Ideally, the curriculum should be re-examined periodically for relevance, perhaps by conducting another needs analysis from scratch. Finally, the curriculum should be presented to the necessary management bodies for approval.

While the curriculum reflects training needs that can be satisfied, it is important to remember those that cannot be addressed because of budgetary constraints, lack of availability of courses or inappropriate timing. These unmet training needs should be recorded and given first consideration during the next curriculum development session.

A needs analysis is not simply a practical step in curriculum development; it is an essential one. It is also a healthy exercise for an MIS department to perform, for it yields an equal and realistic awareness of two vital facts: the cost of supplying necessary and desirable training and the consequences of not satisfying those training needs. IS is often slow to accept that money spent on training is a sound investment, and that the returns — increased knowledge, enhanced skills, job satisfaction and thus improved productivity — can be great.

Duncan is a quality assurance consultant at a large Dallas bank.

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July 31
Should information centers report to the technical training manager?

August 7
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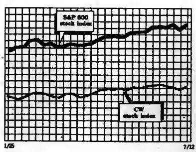

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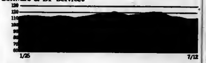
Communications

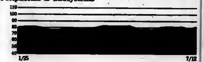
Computer Systems

Software & DP Services



Semiconductors

Peripherals & Subsystems



Leasing Companies

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JULY 12, 1989

Communications and Network Services

EXCH		52-WEEK RANGE		PRICE CLOSE JULY 12, 1989	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN INFO TECHS CORP	62	44	59.75	2.1	3.7
Q	ANDREW CORP	23	16	22	-0.3	-1.1
Q	ARTEL COMM CORP	7	2	5.625	0.1	0.0
N	AT&T	37	24	36.5	1.5	3.5
Q	AVANTEK INC	7	4	5.875	0.6	11.9
N	AYDIN CORP	16	16	17.75	1.5	9.0
N	BELL ATLANTIC CORP	92	68	90.5	0.9	2.1
N	BELLSOUTH CORP	52	28	50.125	1.5	3.0
Q	COMPRESSION LABS INC	6	3	6	0.6	10.5
Q	COMPUTER NETWORK TECH	2	1	2.344	0.0	1.5
Q	CONTEL CORP	68	38	64.125	2.1	3.4
Q	DATA SWITCH CORP	6	4	4.25	-0.1	-2.9
Q	DIGITAL COMM ASSOC	35	17	21	1.0	5.0
Q	DYNATECH CORP	22	17	17.5	0.0	0.0
Q	FIBRONICS INTERNATIONAL INC	7	3	6.5	0.6	0.0
Q	GANDALF TECHNOLOGIES	7	4	5.5	0.1	0.0
Q	GENERAL DATACOMM INDS	8	2	6.0	0.4	7.5
N	GTE CORP	57	38	58.375	2.4	4.4
Q	INFOTRON SYS CORP	12	10	10.5	0.8	7.7
N	ITT CORP	61	46	59.125	1.1	1.5
N	M A COM INC	11	6	8	0.8	3.2
Q	MCI COMMUNICATIONS CORP	42	16	39.25	1.5	4.3
N	NETWORK EQUIP TECH INC	28	14	22.75	2.1	10.0
Q	NETWORK SYS CORP	12	8	9.625	0.1	1.5
N	NORTHERN TELECOM LTD	20	14	19.625	0.5	2.5
Q	NOVELL INC	28	24	27.75	-1.5	-5.1
N	NYNEX CORP	84	53	80.75	0.5	0.6
N	PACIFIC TELESIS GROUP	42	28	43.125	2.9	7.1
A	PENRIL CORP	6	6	5.75	0.1	2.2
N	PLESSEY PLC	46	25	41.875	1.5	4.0
N	SCIENTIFIC ATLANTA INC	21	10	20.375	1.4	7.2
N	SOUTHWESTERN BELL CORP	54	38	54.125	0.5	4.5
Q	3-COM CORP	29	16	17	-0.5	-2.9
N	U S WEST INC	73	53	72.25	1.5	0.5

Computer Systems

EXCH		52-WEEK RANGE		PRICE CLOSE JULY 12, 1989	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLIANT COMPUTER SYS	6	3	4.75	0.5	0.0
Q	ALPHA MICROSYSTEMS	6	5	6.616	0.2	0.0
Q	ALTOS COMPUTER SYS	10	6	6	-0.3	-4.0
A	AMDAHL CORP	27	16	16.75	-0.8	-4.5
Q	APPLE COMPUTER INC	50	24	40	-0.5	-1.2
N	BOLT BERANEK & NEWMAN	18	7	7.5	-0.4	-4.8
N	COMPAQ COMPUTER CORP	102	60	93.625	2.5	4.3
N	COMMODORE INTERNATIONAL	20	6	12.625	-1.4	-8.9
Q	COMPUTER AUTOMATION INC	7	3	3.75	0.1	3.4
N	CONTROL DATA CORP	28	19	21.125	-0.1	-0.6
Q	CONVEX COMPUTER CORP	16	7	13.5	0.6	0.0
N	CRAY RESH INC	67	46	47.875	-1.5	-3.3
Q	DAISY SYS CORP	10	3	3.125	-0.3	-7.4
N	DATA GEN CORP	24	14	17.875	0.5	2.8
N	DATAPOINT CORP	6	5	5.375	0.5	10.4
Q	DELL COMPUTER CORP	16	7	8.125	0.5	3.2
N	DIGITAL EQUIP CORP	122	86	95.375	1.1	1.2
N	FLOATING POINT SYS INC	4	2	2.75	0.0	10.0
N	HARRIS CORP	35	26	33.25	0.5	1.5
N	HEWLETT-PACKARD CO	62	44	53.5	2.0	3.9
N	HONEYWELL INC	84	57	79.5	0.3	0.5
N	IBM	131	108	114.75	0.8	2.5
Q	INFORMATION INTL INC	16	12	13.25	-0.1	-0.8
Q	IPL SYS INC	8	2	7.625	0.5	0.0
N	MAI BASIC FOUR INC	21	6	6	0.5	9.1
N	MATSUSHITA ELEC INDL LTD	216	158	172	-0.3	-1.7
Q	MENTOR GRAPHICS CORP	46	23	37	1.5	0.0
N	NBI INC	6	1	2.25	-0.3	-10.0
N	NCR CORP	63	51	53.75	0.0	0.0
N	PRIME COMPUTER INC	21	12	16.125	-0.1	-0.5
Q	PYRAMID TECHNOLOGY	20	6	11	0.0	0.0
Q	SHAREBASE CORP	4	2	2.375	-0.3	-9.5
Q	SILICON GRAPHICS CORP	24	14	16.75	0.0	0.0
Q	STRATUS COMPUTER	28	21	28	-0.5	-1.8
Q	SUN MICROSYSTEMS INC	23	16	16.75	-0.5	-3.5
Q	SYMBOLICS INC	3	1	1.75	0.1	7.7
Q	SEQUENT COMPUTER SYS INC	28	14	24.5	2.5	10.1
N	TANDEM COMPUTERS INC	20	12	17.5	0.5	2.5
N	TANDY CORP	47	28	46.125	1.1	0.5
N	ULTIMATE CORP	13	6	6.75	-0.5	-6.9
N	UNISYS CORP	28	24	24.375	0.0	0.0
A	WANG LABS INC	11	7	7.25	0.0	0.0

Software & DP Services

EXCH		52-WEEK RANGE		PRICE CLOSE JULY 12, 1989	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ADVANCED COMP TECH	4	1	1.625	-0.1	-7.1
Q	AMERICAN MGMT SYS INC	19	11	11.375	-0.1	-1.1
Q	AMERICAN SOFTWARE INC	18	9	15.875	0.3	1.8
A	ANACOMP INC	10	6	6.875	0.0	0.0
Q	ANALYSTS INTL CORP	21	6	20	0.5	2.5
Q	ASHTON-TATE	28	17	17.75	0.0	0.0
Q	ASK COMPUTER SYS INC	18	12	13.5	0.5	0.0
Q	AUTODESK INC	40	23	37	1.5	0.0
N	AUTO DATA PROCESSING	42	28	41.375	1.1	0.0
Q	BMC SOFTWARE INC	21	6	20.625	1.1	0.0
Q	BOOLE & BABBAGE INC	20	6	17.5	0.0	0.0
Q	BUSINESSLAND INC	16	10	12	0.0	0.0
N	COMPUTER ASSOC INTL INC	22	12	16.875	-1.5	-10.0
Q	COMPUTER HORIZONS CORP	12	7	7.875	0.0	0.0
N	COMPUTER SCIENCES CORP	68	42	62.375	0.5	0.5
Q	CORPORATE SOFTWARE	16	6	12.25	1.5	14.0
N	COMPUTER TASK GROUP INC	17	11	12.375	0.5	4.3
Q	COGNOS INC	9	5	5.875	0.0	0.0
Q	COMSHARE INC	25	19	30.5	1.5	4.7
N	CULLINET SOFTWARE INC	6	4	6.125	-0.5	-6.9
N	GENERAL MTRS (CLS E)	54	28	52	0.5	1.0
Q	HOGAN SYS INC	7	4	6.125	0.4	6.5
Q	INFORMIX CORP	24	7	8.75	-0.6	-6.7
Q	INTELLICORP INC	6	2	2.75	-0.1	-3.9
Q	KEANE INC	19	8	14	0.5	3.7
Q	LEGENT CORP	28	16	24.5	-0.3	-1.0
Q	LOTUS DEV CORP	27	15	23	-0.8	-3.2
Q	MANAGEMENT SCI AMER	12	6	10	0.0	0.0
Q	WORDSTAR	4	2	3.125	-0.1	-3.8
Q	MICROSOFT CORP	68	45	53.25	-2.0	-3.6
N	NATIONAL DATA CORP	24	18	31	1.0	3.1
N	ON LINE SOFTWARE INTL INC	7	4	6.375	-0.5	-6.9
Q	ORACLE SYS CORP	17	7	16.375	1.0	6.5
N	PANSOPHIC SYS INC	18	12	13	-0.6	-4.6
Q	PHOENIX TECHNOLOGIES INC	10	6	7	-3.5	-33.3
Q	POLICY MGMT SYS CORP	31	21	20	1.0	3.4
Q	PROGRAMMING & SYS INC	20	11	19.25	-0.3	-1.5
Q	RABBIT SOFTWARE INC	6	1	1.063	-0.1	-10.6
Q	RELATIONAL TECHNOLOGY INC	21	8	10.25	0.0	0.0
N	REYNOLDS & REYNOLDS CO	34	18	24	-0.5	-2.0
Q	SEI CORP	20	16	17.5	0.0	0.0
Q	SHARED MED SYS CORP	22	14	16.625	-0.5	-3.0
Q	SAGE SOFTWARE INC	10	6	8.75	0.9	11.1
Q	SOFTWARE PUBG CORP	28	19	26	1.5	9.7
A	STERLING SOFTWARE INC	8	5	6.875	-0.1	-0.6
Q	SUNGARD DATA SYS INC	20	16	17.6	1.0	6.1
N	SYSTEMATICS INC	37	28	33.5	0.0	0.0
N	SYSTEM CENTER INC	25	13	24.5	0.5	1.0
N	SYS. SOFT INC	27	11	25.75	1.3	5.0

Semiconductors

EXCH		52-WEEK RANGE		PRICE CLOSE JULY 12, 1989	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADV MICRO DEVICES INC	15	7	8.875	-0.5	-5.1
N	ANALOG DEVICES INC	16	10	10.5	0.0	0.0
Q	ANALOGIC CORP	11	7	10	-0.3	-2.4
Q	CHIPS & TECHNOLOGIES INC	28	11	26.75	1.5	6.1
Q	INTEL CORP	37	19	29.75	1.5	5.0
Q	LSI LOGIC CORP	14	8	9	0.0	0.0
N	MICRON TECHNOLOGY INC	28	16	17.75	-0.6	-3.4
N	MOTOROLA INC	60	38	53.625	2.3	4.4
N	NATL SEMICONDUCTOR	12	7	6.875	-0.1	-1.8
N	TEXAS INSTRS INC	47	28	40.625	1.5	3.8
A	WESTERN DIGITAL CORP	15	6	6.5	-0.1	-1.3

Peripherals

EXCH		52-WEEK RANGE		PRICE CLOSE JULY 12, 1989	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLOY COMP	4	1	1.875	0.0	0.0
N	AM INTL INC	6	5	5.25	0.0	0.0
Q	AST RESH INC	17	7	9.75	0.3	0.0
Q	AUTO TROL TECH CORP	6	4	6	0.0	0.0
Q	BANCTEC INC	15	6	14.5	1.4	10.5
Q	CIPHER DATA PRODS INC	11	6	8.125	0.5	3.2
A	COGNITRONICS CORP	6	2	4.75	0.0	0.0
Q	CONNOR PERIPHERALS	12	7	12.25	0.1	1.0
A	DATAPRODUCTS CORP	19	10	16.75	0.0	0.0
A	DATARAM CORP	11	7	9.125	0.4	4.3
N	EASTMAN KODAK CO	52	40	47.375	0.0	0.0
Q	E M C CORP MASS	6	3	5.25	-0.1	-2.3
Q	EMULEX CORP	13	7	8.875	-0.1	-1.4
Q	EVANS & SUTHERLAND	22	13	18	0.5	0.0
Q	IDOT CORP	4	6	2	0.1	6.7
Q	INTERLEAF INC	14	6	7.625	-0.3	-3.2
Q	IOMEGA CORP	6	2	2.625	0.1	0.0
Q	LEE DATA CORP	4	2	2.5	-0.5	-16.7
Q	MASSTOR SYS CORP	4	2	3.188	1.1	54.5
Q	MAXTOR CORP	11	6	9.625	0.5	5.7
Q	MICROPOLIS CORP	17	6	9.5	0.4	7.5
Q	MINISCRIBE CORP	16	1	3.25	0.0	0.0
N	MINNESOTA MNG & MFG CO	75	28	72.5	1.5	2.5
Q	PERSONAL COMPUTER PRODUCTS INC	8	4	4.969	0.1	1.4
Q	PRIAM CORP	2	1	0.563	-0.1	-18.2
Q	PRINTRONIX INC	11	7	8.625	-0.1	-1.4
N	QMS INC	8	6	8.75	0.5	6.1
Q	QUANTUM CORP	22	8	21.5	2.8	14.7
N	RECOGNITION EQUIP INC	13	6	12	0.0	0.0
Q	REXON INC	8	6	7.5	0.1	1.7
Q	SEAGATE TECHNOLOGY	19	7	13.625	-0.8	-5.9
N	STORAGE TECH CORP	28	11	12.75	-1.5	-8.9
Q	TANDON CORP	6	1	0.969	-0.1	-6.9
N	TEKTRONIX INC	35	19	22.125	0.1	0.6
Q	TELEVIDEO SYS INC	1	0	0.313	0.0	0.0
N	XEROX CORP	68	52	68.875	0.5	0.8

Leasing Companies

EXCH		52-WEEK RANGE		PRICE CLOSE JULY 12, 1989	WEEK NET CHNGE	WEEK PCT CHNGE
Q	AMPLICON INC	116	11	15.5	-0.8	-4.8
N	CAPITAL ASSOCIATES INTERNATIONAL INC	8	5	7.5	0.0	3.4
N	COMDISCO INC	35	19	30.875	1.1	4.4
Q	CONTINENTAL INFO SYS	6	0	0.469	0.0	-6.8
Q	LDI CORPORATION	17	13	15.25	-0.5	-2.4
Q	PHOENIX AMERN INC	6	6	4	0.5	14.3
Q	SELECTERM INC	8	6	6.625	0.0	0.0

EXCH:N—NEW YORK;A—AMERICAN;Q—NATIONAL

Scuttlebutt

CA learns it's harder to make people believe good news than bad

Rumors, true or false, have their effect on investor confidence. When they follow a disappointing earnings projection, the results can be compounded. Computer Associates International, Inc. released a statement Thursday to deny rumors of massive layoffs (see story page 8), but the damage had already been done. CA shares fell 2¼ points to close Thursday at 17¼.

Phoenix Technologies, Inc. could not blame the rumor mill for this week's poor performance. Phoenix's report of an unexpectedly large third-quarter revenue decline, possibly because of a soft PC market overall, produced a drop of 2¼ points; it closed the week at 7. Cray Research, Inc. also suffered from worried investors; just a few weeks after founder Seymour Cray left to start yet another supercomputer company, Cray shares hit the skids. Cray finished the week down 2¼ points at 47½, the lowest it has been for the past year.

Rumors can also have positive effects. Honeywell, Inc., rumored to be the target of a takeover attempt by General Electric Co., saw its shares rocket 9¼ points to close the week at 86, well above its high point for the past year. IBM also had a good week, finishing at 114¾, up 2¾ points. Digital Equipment Corp. was unchanged at 95¾.

JOSEPH J. PATTON

Jet lab reaches beyond planets

BY J. A. SAVAGE
CW STAFF

PASADENA, Calif. — Blindfolded in the desert arroyo, Richard Doyle, artificial intelligence supervisor at the Jet Propulsion Laboratory, was the left rear wheel of a six-wheeled Martian robot.

There were other blindfolded (human) wheels, blindfolded arms, blindfolded elbows and someone to function as a camera seeing device.

Each had to communicate with the others in precise language to enable them all to move together over the sand, between the rocks and cacti, without falling on their blindfolded faces.

By breaking down the parts of the robot into human modules, the researchers got a clearer idea of how to build AI software to maneuver the real Martian robot over vast and complicated terrain.

"We can't send instructions to the Mars Rover the way General Motors sends instructions to its robots, like 'turn motor A 30 revolutions per second.' With this, you get to tell it to go 10 kilometers east because you don't know what the terrain looks like," said David Miller, technical group supervisor for robotic intelligence.

The lab is sponsored by the California Institute of Technology for the National Aeronautics and Space Administration. Its primary responsibility is to explore space through the use of unmanned spacecraft.

Miller and his group are constructing software in LISP to perform complex tasks with the most basic instructions from earth, to be performed millions of miles away.

JPL's Kukkonen

The robot's mission is to collect scientific samples and then beam data down to earth every few hours or every day. The Rover is set to be launched in the late 1990s.

Miller expects prototype software in the next couple of years. His major problem is to create a robot not with finesse, but simply one that will not commit suicide: "You don't want it to do anything stupid. You can always reprogram it there as long as it keeps out of trouble." He hopes the expensive robot will last long enough to perform, but "if it goes 10 meters and sinks into an abyss, it will still be valuable," he said.

Miller has walked in a robot's shoes

While the Mars Rover will be operating a few million miles away, the Voyager spacecraft is 5.5 billion miles away. It is expected to approach Neptune this August. When it does, the lab's huge AI program — Spacecraft Health Automated Reasoning Prototype (SHARP) — will be fired up in parallel to the human spacecraft monitors for a pilot run.

The 12-year-old spacecraft is now monitored on six consoles, and operators have to observe their monochrome screens and pore through thick, repetitive readouts of the state of the spacecraft's equipment.

What is not shown in the monitors has to be filled in according to the operator's knowledge, Doyle said.

SHARP allows operators to see the spacecraft's multiple systems graphically. If an alarm is set off, an operator can go to the most minute levels of hardware to search out the problem. "It's about 400,000 lines of code," said David Atkinson, manager of the computer science and application section of the lab. He maintains that SHARP, also written in LISP, is likely the largest AI application yet devised.

Atkinson *is working on the largest AI application ever*

Data from early missions has been destroyed because of the lack of continuity, according to Atkinson.

He said that tapes from the Surveyor mission that explored the moon "were deemed no longer needed. They were erased and recycled."

Neural networks

AI through software is only one way the lab is getting its robots to be smart.

Carl Kukkonen, manager of the lab's supercomputing project, said he has a robotic arm that "learns" through neural networking. "We never had to write a computer program," he said.

"Neural networks have progressed far enough along to see applications. We're learning how to do it in hardware, where a few chips can create a massively parallel analog computer," Kukkonen said.

Kukkonen's staff is also writing programs to show that parallel supercomputers have applications in the real world. Hardware exists for extremely fast parallel computers, but there are few applications.

In 1986, the lab took on a project for the U.S. Air Force to model the Strategic Defense Initiative (SDI).

Kukkonen said that since most developmental research is funded by the U.S. Department of Defense, the lab could play into its funding scheme by modeling SDI.

"We wrote 200,000 lines of parallel code and can do the simulation in real time," he said. The model is run on a 128-node hypercube developed by Caltech and is subdivided into nodes for tracking platforms, battle managers and weapons.

"Unless you do this kind of simulation, you can't tell whether SDI will work," Kukkonen said. In the simulation, about two-thirds of the "threat" was eliminated. "What the SDI people will do is run simulations to improve the odds," he said.

Moon landing

FROM PAGE 1

generated, it is cataloged by different parameters, such as product, orbit or time, Pieri said. They are put into a relational database where they can be accessed by the scientists working on the Magellan project.

When scientists want to access the information, the JPL can distribute it via an optical disk. "We're keeping an archive of magnetic tape," Pieri said, "but our working copy and the one that the investigators and the scientists will be doing their immediate research on and distribution of will be optical disk."

Magellan, launched May 4 from the space shuttle *Atlantis* and expected to reach Venus in August 1990, was sent on its mission to gain a better understanding of the geology and history of Venus, according to Franklin O'Donnell at the JPL. Venus is interesting because of its similarities to Earth, including its size and distance from the sun. There are also stunning differences, however, such as the fact that the surface of Venus is 900 degrees Fahrenheit, he said.

Each of Magellan's 1,852 orbits will find it looking at a 10- to 17-mile swath of the planet, said Jim Doyle at the JPL. Swaths will overlap slightly, and they will eventually be pieced together in mosaics that will be made into maps of the surface.

"There will be someone analyzing each of the individual strips for data control to check on the initial findings," Pieri said. An initial report will be readied 45 days after the mapping phase of the mission begins in August 1990, while a final report will be put together once the mission has been completed. Furthermore, scientists around the world will continue to be able to access the information after that, she said.

Because the surface of Venus is obscured by carbon dioxide clouds that are tens of miles thick, Doyle said, it would be pointless to use traditional optical-scanning equipment on the Magellan. Magellan will collect information by using synthetic aperture radar (SAR), a technique that involves directing the radar energy in the form of short pulses with a highly directional antenna to the side. The energy is sent out in pulses, and the echoes are recorded on Magellan to map the planet's surface without actually seeing it.

Magellan *is shuttling off to Venus to collect a few terabytes of data*

The information will then be stored on-board the probe on two multitrack digital recorders for playback. The storage capacity of the recorders is approximately 1.8 billion bits. Once they are full, the data will be transmitted to computers on Earth, which will then store the information.

On Earth, the main radar processing-control computer is based on the older technology of the Digital Equipment Corp. VAX-11/785 with I/O handled by an Aptec Computer Systems, Inc. IOC 2400. There is other custom hardware and temporary storage on magnetic disks and tapes as well, O'Donnell said.

Extended work on the radar images will be carried out in a system that is basically a VAX cluster environment with two VAX 8650s and two VAX 11-780s, a Microvax II and an Alliant Computer Systems Corp. computer that will have 12 tape drives and more than 17G bytes of magnetic disk space, O'Donnell said.

The storage system — with write-once read-many optical disks, six stand-alone single-platter drives that can access 1G byte of data without operator intervention and two optical-disk jukeboxes that can access 32G bytes without being changed — will store the contents gathered during the mission.

HP to license RISC technology

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. will license its reduced instruction set computing (RISC) Precision Architecture this fall to at least two companies, according to industry analysts. In doing so, the company will throw its considerable corporate weight into the quest for a standard RISC processor architecture.

Analysts said they believe that the first large company to back the architecture will be Hitachi Ltd. A second small niche-market company is also said to be lined up.

HP and Hitachi executives declined to comment.

The move would make HP one of the last RISC processor makers to license technology. Sun Microsystems, Inc. and Mips Computer Systems, Inc. are thought to be the leaders in getting their architectures into general use by other manufacturers. Intel Corp. and Motorola, Inc. are also licensing their RISC architectures.

This is an unusual move for HP, long considered to be too conservative to look for technology liaisons with other companies. But it is consistent with the moves to back standards it has made during the last year.

New image

"HP is ready to shed its fairly Boy Scout image, becoming instead suburban fathers on the rampage," said Nina Lytton, editor of "Open Systems Advisor" in Boston. "They are becoming quite aggressive."

Sandra Gant, an analyst at Infocorp in Santa Clara, Calif., said that HP had been talking of licensing its Precision Architecture for the last two months.

"HP is in the same situation that Sun has been in the past. If you want to make claims of having open systems, you have to make what you have available," she said.

In a related development, HP, which acquired Apollo Computer, Inc. in April, will merge Apollo's Domain RISC architecture with Precision Architecture by 1992, according to Pamela Emery, manager of the Network Systems Group at HP.

The common architecture will make Domain's object code compatible with Precision Architecture.

Compaq

FROM PAGE 1

similar licensing pacts. IBM has made it a prerequisite to pay past royalties associated with its earlier PC technologies before licensing MCA technology.

IBM gains the added cachet of having its biggest competitor acknowledge by default that MCA is a legitimate standard, said Tim Bajarin, vice-president at Creative Strategies Research International, Inc., a San Jose, Calif.-based research group.

The Compaq-backed rival to MCA, Extended Industry Standard Architecture (EISA), "is not going to be a major product, but I don't think that this announcement suggests [MCA has won]," said Drew Peck, an analyst at Donaldson Lufkin and Jenrette, Inc. in New York. "The battle between EISA and Micro Channel will continue for several more years before it is settled."

Far from conceding the issue, Compaq President and Chief Executive Officer Rod Canion was careful to stress that "the conclusion of this agreement does not alter Compaq's product direction." Compaq remains fully committed to industry-standard architectures and enhancements such as EISA, he added.

Swavely was emphatic that Compaq does not see significant customer demand for MCA. However, he conceded, "If customers want Micro Channel products, I would be foolish or crazy to say that we would not give them what they want."

Two other members of the so-called Gang of Nine EISA supporters downplayed speculation that Compaq's licensing of MCA is negative for EISA. A spokesman for AST Research, Inc. was vehement in his belief that Compaq is not diverting from its commitment to EISA. "Any analyst who makes that statement goes well beyond the scope of what was announced," he insisted.

Bajarin, meanwhile, said he has been talking with some EISA supporters and added that and many were surprised at the extent of the license terms.

With the agreement, Compaq will be able to cover all possible bases in IBM PC-compatible bus options, analysts said. Moreover, if the deal provides Compaq with access to OS/2 Extended Edition copyrights, it could help bolster recent statements from Compaq positioning it as more than a desktop computer supplier. The PC supplier is expected to move into the server market with products based on high-speed Intel Corp. chips — the 80386, 80486 and future-generation microprocessors.

"Compaq is obviously in a nice position to go forward into the '90s. Whatever [bus] wins, they are covered," Bajarin said.

Many IBM accounts intend to continue purchasing Compaq machines and want IBM to keep the desktop open, analysts said.

The IBM spokeswoman said she is unaware of any customer pressures, and Swavely termed analyst comments "inappropriate speculation." Compaq said that given the relative size of each company's patent portfolio — IBM has 32,000 patents — the agreement will result in a net payment from Compaq to IBM. The companies declined to specify the terms of that payment.

Wall Street analysts agreed that the amount, which one estimated to be at least $40 million per year over the five-year payment schedule, does not appear significant from an income point of view.

"The absolutely fascinating aspect of it is that it is a fixed dollar amount," said Harvey Allison, an analyst at Wertheim Schroder in New York. "What is interesting is that it means the amount Compaq may pay is totally independent of its revenues and also totally independent of which patents the company utilizes." This may also mean that Compaq will not have to make any additional payments for MCA-based products.

Compaq said it has been accruing funds for this purpose since it began negotiations with IBM in 1987, shortly after the introduction of the MCA bus.

Senior Writer Alan J. Ryan contributed to this article.

EISA ahoy

A flurry of activity surrounded the unshipped, unfinished Extended Industry Standard Architecture (EISA) bus last week.

Key EISA manufacturer Intel Corp. publicly demonstrated the first working EISA chip set, and officials said samples have been delivered during the past month. These shipments adhere to the schedule that Intel set at EISA's announcement last September.

EISA is an advanced 32-bit PC bus developed by a consortium of IBM competitors in the personal computer market; it is aimed squarely at supplanting IBM's Micro Channel Architecture for applications with high I/O demands.

Production of EISA chip sets is scheduled for this September, with full systems to follow. Most observers expect EISA systems to debut at Comdex/Fall '89 this November.

Despite its support of EISA, Intel stressed that hardware vendors and customers now have two choices — Intel's MCA-compatible chip set or EISA. Days earlier, Altos Computer Systems jumped on the EISA wagon by announcing that Altos systems implementing the Intel I486 will include the EISA bus.

To help alleviate potential board conflicts, Micro Computer Systems, Inc. last week announced the Extended ISA Configuration Utility. The utility, which will be implemented by systems and board vendors, stores system information in nonvolatile memory, allowing the read-only memory BIOS to configure the system more easily during the powering up process.

DOUGLAS BARNEY

Dbase users can now do sophisticated statistics

BY DOUGLAS BARNEY
CW STAFF

TORRANCE, Calif. — Ashton-Tate Corp. Dbase users who need more than the ability to sort, extract and store data can now enter the murky realm of statistics and get cracking on multiple regression analysis, curve fitting and other high-level functions.

To gain these abilities, users can shell out $400 for Dbase Stats, a product developed for Ashton-Tate by statistics player SPSS, Inc. It has been tailored for Dbase users and includes an interface based largely on the Dbase IV Control Center menuing system. Dbase Stats can also be invoked from within Dbase III Plus or Dbase IV, said Ed Hamburg, vice-president of business development for SPSS.

The product is an extension of an SPSS strategy from Digital Equipment Corp. VAX minicomputers. Previously, a version of SPSS running on VAXs could access data from systems such as Oracle Corp.'s Oracle and do sophisticated analyses. The difference with the Dbase product, however, is that Dbase Stats has been simplified to appeal to a broader number of users.

The product is aimed at users with little knowledge of statistics who are looking for unseen relationships in their data. It is available from Ashton-Tate resellers.

CA assists in security conversion

BY STANLEY GIBSON
CW STAFF

ST. LOUIS — In an attempt to lure IBM users to its security software, Computer Associates International, Inc. last week packaged its software with conversion aids and on-site help.

CA-Conversionpack for Security is a combination of software and support to assist users of IBM's Resource Authorization and Control Facility (RACF) in converting their data center's access-control software to CA's CA-ACF2 or CA-Top Secret security products.

The Conversionpack for Security includes conversion aid software that will run on IBM's MVS, MVS/XA or MVS/ESA operating systems in conjunction with IBM's JES2 or JES3 Job Entry Subsystems, using RACF 1.5 or later releases.

No charge

When a customer buys CA-ACF2 or CA-Top Secret, conversion software is included at no charge, said Sanjay Kumar, CA executive vice-president for strategic planning. CA is also offering up to three weeks of on-site assistance by CA technical specialists; however, the customer must pay for those services. Kumar could not give a specific price but said that CA consultants normally charge $1,000 to $1,500 per day.

In addition, CA said it plans to acquire Cortana, a PC security software product from United Software Security, Inc. in Vienna, Va. Currently written for MS-DOS, Cortana will be rewritten for OS/2 and integrated with CA's other security products, Kumar said.

Kumar said the move signals CA's plans to include desktop and LAN environments in what CA calls its "multihardware platform, multioperating system security strategy."

CA said it would announce pricing and availability after completing the acquisition, which it expects to take place July 21.

Prior to last week's announcements, CA said that CA-ACF2 and CA-Top Secret support IBM's Data Facility System Managed Storage/DFP Release 3.1, a component of IBM's MVS/ESA. That release became generally available on June 30.

Kumar said CA-ACF2 and CA-Top Secret will allow users to determine levels of security for different kinds of system-managed storage under the IBM release.

TRENDS

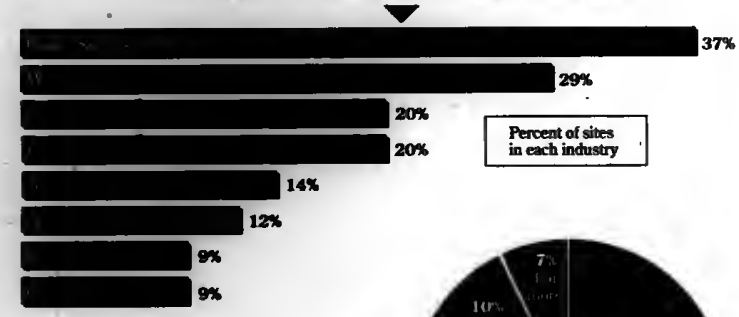
Being ready to cope with a system disaster is high on the IS agenda, but relatively few users rely on outside recovery services

Few use professional services

Fewer than one-fourth of approximately 9,600 IBM and compatible mainframe sites surveyed currently are using or planning outside services. Though a small portion, this group is expected to grow.

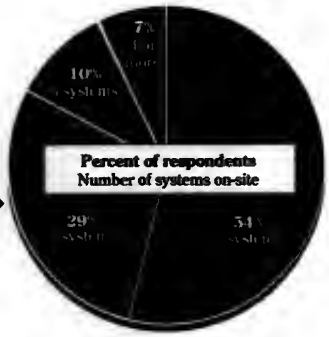
Who they are

Banks are the biggest customers; more than one-third already use outside recovery services, and an additional 5% are planning to implement them.



What they're protecting

Among sites that do implement outside services, the majority have a single mainframe installed. Sites with multiple systems remain a relatively untapped market.



SOURCE: COMPUTER INTELLIGENCE, LA JOLLA, CALIF.

CW CHARTS: FRANK C. O'CONNELL

NEXT WEEK

Mary Jo Burnes, manager of Cincinnati Milacron's traditionally conservative IS function, is entering the world of IS profit centers. Milacron is combining five divisions, including IS, into a unit to sell computer-integrated manufacturing services to machine tool customers. A report appears in Manager's Journal.

RICK DEBINGER

There's some unusual reorganizing going on throughout the country in IS departments. These departments are restructuring based not on technology or personnel issues but on company goals. The new models share basic elements, but the link is that the focus is company business priorities. Executive Report explores this.

INSIDE LINES

But were we covered?

A troublesome computer virus shut down personal computers at a major insurance company's field office in Waltham, Mass., for two weeks, according to a company insider. It cost "lots of money and some guys from IBM" to eradicate the virus, the source said. Company officials, however, refused comment on the incident, citing fears that publicity would encourage hackers to attempt to repeat the episode at other field offices scattered throughout the company. The Waltham computer installation is the company's largest outside of its New York headquarters.

The More Unix, the better?

After being cut out of at least one federal contract that specified Berkeley Unix because its HP-UX version of Unix does not easily port to University of California at Berkeley Unix 4.2 technical specifications, Hewlett-Packard is developing "More/BSD" to run on its 9000 series of minicomputers. It is now in a beta-test site.

Netware link broken?

With his second sabbatical scheduled to have ended July 4, the continued absence of Craig Burton, Novell's executive vice-president, has stoked speculation that he won't ever be coming back. Burton was considered Novell's chief technology strategist and President Ray Noorda's right-hand man until a year ago. The two reportedly have since had a major falling-out, partly over business strategy. According to a source close to Novell and 3Com, Burton has met with the two chief executives from archrival 3Com — Chief Executive Officer Bill Krause and founder Bob Metcalfe. Moreover, there are reports of possible legal friction between Burton and Novell regarding his right to exercise some stock options.

Left out of last week's press kit?

This week, DEC will announce Decserver 300, a network server that provides twice the performance and support and twice the number of lines as the current Decserver 200 model. Priced at $4,400 and available immediately, the product is said to logically connect up to 16 asynchronous devices to one or more hosts on an Ethernet local-area network. DEC is also expected to announce a licensing program for its Local-Area Transport so that workstations will be able to use the protocol to access non-DEC hosts.

It wasn't us!

Sun officials are now speculating that the stock sell-off that preceded last month's prediction of a losing quarter was not caused by insider trading but was the by-product of a loose-lipped reporter. Although the news wasn't made public until after the stock market closed on June 4, Sun officials had contacted members of *The Wall Street Journal* and *The New York Times* to arrange post-announcement interviews with President Scott McNealy. An enthusiastic scribe, the story goes, then called an analyst for a reaction, who in turn set the ball rolling on Wall Street.

CUAt the end of the road

The ever-changing CUA component of IBM's Systems Application Architecture (SAA) will be in for another tweaking, perhaps next year when a touch-screen capability will be added. IBM's executive information system, IBM Executive Decisions/VM, unveiled at May's Officevision announcement, was not CUA-compliant at the time. The reason? It used a touch screen on its Personal System/2 workstation monitor. So IBM chose between relegating the application to the netherworld of the non-SAA and making the touch screen part of CUA, which a spokesman confirmed last week it will do.

Cough it up. Let's see, with compatible PCs valued at about $50 billion these days, a 1% patent royalty could theoretically add up to $500 million. Not a bad chunk of change to pay for the well-stocked IBM corps of legal beagles. Anybody with inside dope on the patents involved in last week's Compaq-IBM exchange (see page 1) can upload the info to News Editor Pete Bartolik's mailbox on the CW bulletin board. Dial in at 508-626-0214, or make voice calls to 800-343-6474.

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